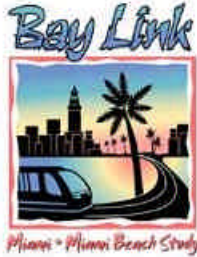


MIAMI-MIAMI BEACH TRANSPORTATION CORRIDOR STUDY



Technical Memorandum: Capital Cost Estimating Methodology And Results Report (Task 4.6)

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1.0 Introduction

This document provides a framework for the presentation of methods, cost data and cost assumptions to be used in the development of conceptual level capital costs estimates for alternatives that will be defined, developed and evaluated as part of the Bay Link Corridor Study. Comparative capital cost estimates will be required in progressive levels of reliability as the process passes through the initial, conceptual and refined alternative development process.

This Technical Memorandum presenting the Capital Cost Estimating Methodology is part of set of common technical methods and guidance to be followed for the development and review of each alternative so that decisions on the selection of proper alignment(s) and technology(ies) for the corridor can be based on comparable information. The development of the capital cost estimating methodology is identified as defined as a deliverable in Task 4.6 along with the conceptual results report.

1.1 Purpose and Scope

The purpose of this technical memorandum is to:

- Describe the methods that will be used to define, quantify and present capital cost information required for the evaluation of alternatives;
- Define the nature and sources for cost data to be used in the preparation of capital cost estimates;
- Define cost assumptions that will be used in the preparation of capital cost estimates; and
- Explain limitations that are present in capital cost estimates at this stage of project definition.

Alternatives to be studied during the course of this study will undergo various tiers of screening or evaluation before a Locally Preferred Alternative (LPA) is selected. The objective of each tier of screening is to reduce the number of alternatives being considered to those that have promise as the LPA. As the evaluation progresses through the screening process, the level of capital cost estimates begin at a general parametric level of assessment and progresses to greater levels of comparative detail as the number of alternative alignments is reduced and the definition is expanded.

The capital costing methodology is intended to provide professionally accepted guidelines for accurately and consistently estimating the costs of the capital components of the alternatives under consideration in the Bay Link Corridor. It will also provide a framework for using the cost estimates by defining the basis for the estimates and the associated level of confidence for the estimated costs of the various components. This will allow decision-makers to effectively evaluate capital costs as one of the significant criteria in their evaluation and selection of the components which will comprise the LPA. Capital cost estimates will also contribute to the assessment of effectiveness and efficiency.

2.0 Estimating Methodology

The methodology to be used in generating capital cost estimates has been developed in general accordance with FTA guidelines for estimating capital costs. Part of the FTA guidelines call for cost components for the various alternatives to be developed and summarized into one of eight cost categories. These cost categories are described in Section 2.2 below.

2.1 General Approach

Each of the initial alternatives developed have conceptual engineering plans and profiles developed for the various transit technologies as the evaluation and development process progress, increasing levels of detail will be developed as the evaluation process progresses through the initial, conceptual and refined phases of development. There may be more than one alignment alternative for a particular technology and possibly different lengths and/or design features (different numbers and location for stations, at-grade versus aerial, for example). The alternatives will go through an initial screening process to reduce the number of alternatives to take into the conceptual planning analysis and evaluation phase.

A significant part of the conceptual planning process will be to develop a common set of design standards, typical cross-sections and other facility elements for the transit technologies included in the various alternatives. These facility elements can be classified into one of two broad groups, either typical or non-typical facilities. Typical facility costs are developed for items that can be defined by a typical cross-section that is applicable over a given length of alignment or based on a conceptual scope of work developed as appropriate for a specific typical facility. The typical facility unit cost is developed by combining the costs for all of the individual work items applicable to a typical cross section or facility and creating one composite unit cost. Typical cross sections for each alternative will be developed as the planning process moves forward. Non-typical facility costs will be developed based on conceptual design relating to the unique facility under consideration. For those non typical facilities elements that are necessary for overall system operation, but whose costs cannot be partly allocated to a specific geographic segment of the system (e.g., vehicles, storage and maintenance facility, etc.), cost will be included at the summary level for each alternative. After details are prepared for both typical and non-typical facilities and the cost data is developed, it will be put into a cost stream format based on the stationing of the alternative alignments. This format relates the cost directly to the plan and profile drawings and assists in summarizing costs, and in the analysis of the various alternatives.

2.2 Capital Cost Categories

In accordance with recommended FTA estimating methodology, capital cost components of the various alternatives will be classified into the following eight cost categories.

- Guideway Elements
- Storage and Maintenance Facility
- Systems Elements
- Stations
- Vehicles
- Special Conditions
- Right-of-Way
- Project Soft Costs

The following provides brief descriptions of the eight cost categories and their constituent elements.

2.2.1 Guideway Elements

Guideway elements are portions of the transit system that can be assigned costs at a fairly aggregate level with an acceptable level of accuracy. Most commonly these are line portions of each alternative that can be represented by typical cross sections such as those reflected in the conceptual alignment drawings and in Section 4.0 of the *Technology Assessment Report*. Guideway elements are subdivided into two primary sub-categories, guideway and trackwork/running surface.

2.2.1.1 Guideway

The guideway category consists of three primary elements, at-grade construction, aerial structure construction, and depressed/subway construction. For rail technologies this category includes all the foundational construction elements up to the point where trackwork begins. For vehicle technologies such as busways, this category includes all of the construction elements up to and including the travel surface for the vehicle. The guideway cost estimates are based on parametric unit cost information specifically developed for each construction type. Generally, all the parametric guideway cost estimates provide for the following:

- At-Grade construction
 - All site work, including clearing, pavement removal and excavation
 - Borrow fill and soil stabilization
 - Seeding slopes and ditches
 - Drainage systems for the guideway
 - Pavement subgrade, base, and surface finish (concrete or asphalt) for bus technologies
 - Subgrade preparation and subballast for rail technologies
 - Retaining walls where needed in cuts and fills
- Aerial structures construction
 - All site work, including demolition and clearing
 - Structural excavation and backfill
 - Foundation support
 - Concrete footings, columns, pier caps, and superstructure
 - Steel reinforcement
 - Pedestrian barrier on both sides
- Depressed/Subway construction
 - All site work, including demolition and clearing and restoration
 - Structural excavation and backfill
 - Temporary excavation support and dewatering
 - Concrete footings, base slabs, stem or exterior walls, interior walls and roof slabs

Separate parametric unit prices will be developed for various increments in the height or depth of typical sections for embankment, retained cut or fill, and aerial structures.

The trackwork unit cost for rail transit technologies is calculated separately from the guideway construction unit cost.

Travel surface includes the base, paving (asphalt or concrete), curbs, medians or other traffic control devices associated with the particular vehicle technology. Travel surface unit cost are divided into the following two types of construction:

- Asphalt Pavement
- Concrete Pavement

The cost of constructing the supporting subgrade or aerial structure will also be included in the guideway unit costs.

2.2.1.2 Trackwork

Trackwork includes the running rails, ties, ballast, direct fixation, embedded and special work components (turnouts, crossovers, etc.) associated with the rail transit technologies. Trackwork unit costs are divided into the following four types of construction:

- Ballasted track (used in at-grade construction);
- Direct-fixation track (track fixed onto a structural concrete slab, used in aerial or subway construction);
- Paved or embedded track (used in street-running situations); and
- Shop track (used in the maintenance shop building).

The cost of constructing the supporting subgrade, subballast, or aerial structure will be included in the guideway unit costs. The cost of the trackwork is a separate unit cost. The standard rail for ballasted and direct-fixation track is continuous welded 115RE rail. The ballasted trackwork unit cost includes rail, concrete ties with ballast, rail welding, rail fasteners, and rail anchors. For aerial structures the rail is attached on a second-pour concrete plinth pad with a direct fixation rail fastener. The unit cost for embedded trackwork includes rail, rail welding, reinforced concrete track slab, structural running surface, coated tie bars, and rail embedding materials. Track drains are included in the guideway unit costs. The costs for special trackwork are based on mainline construction and are either ballasted, direct-fixation or embedded construction as required. Special trackwork includes single and double turnouts, crossovers, wyes, pocket tracks, and rail crossings. The costs for special trackwork are applied on a per unit basis at specific locations. The trackwork costs for the storage yard or maintenance shop facility is included in the cost category for Storage and Maintenance Facilities.

2.2.2 Storage and Maintenance Facilities

This cost category is applicable to both bus and rail technologies. It includes vehicle storage and maintenance buildings, trackwork for storage of rail vehicles, office support areas, maintenance of way facilities, major shop equipment, and operation control center. It covers the expansion (if required) of bus maintenance facilities or additional bus garage and maintenance facility capacity and related office and communication control facilities for the bus technologies.

2.2.3 System Elements

This cost category includes four functional cost elements; control systems, electrification, communications and revenue collection.

2.2.3.1 Control Systems

Control systems cost includes the signaling and control systems required for safe and efficient operations of the transit technologies. For rail transit, it includes automatic wayside signals in areas of separate right-of-way, automatic train stop circuitry in the track and vehicles, block supervision where required for street operation, traffic signal pre-emption, and protection at hazardous guideway/highway at-grade crossings (automatic gates, flashing lights, bells, and signs). The unit costs include an allowance for testing, training, and startup.

2.2.3.2 Electrification

The electrification system provides the power for all train operations of rail transit technology. (Other transit technologies are assumed to be non-electrified.) It consists primarily of substations and mainline track power distribution facilities. For LRT, the traction power system is based on a dc overhead contact system (OCS). The OCS consists primarily of support poles, brackets arms and hardware, cables, and messenger cable. Signal and communication power needs are also included in the traction power costs and therefore other transit technologies will also have a traction power cost category to cover this cost element only. Power supply or distribution for buildings associated with the storage and maintenance facilities or power for passenger stations is not included in this cost category. The unit costs include an allowance for testing, training, and startup.

2.2.3.3 Communications

The communications system provides the necessary subsystems to support the total operational requirements of the transit technologies. The communications system costs provide for the following subsystems and /or functions as appropriate to the technology.

- Supervisory and control and data acquisition subsystems (SCADA) to enable the remote monitoring and control of vehicle/train operations, guideway/track conditions, substations, and station support facilities from the OCC using fiber-optic cable transmission systems.
- Communications subsystems consisting of two-way radio, public address (PA), closed circuit television (CCTV) surveillance equipment, PABX (digital switch) telephone equipment, and variable message signs (VMS).
- Interface to the fare collection and ticket vending equipment.
- Equipment for the hearing-impaired, reader boards, and associated wiring, as well as an allowance for testing, training, and startup is included in the unit costs for the above systems elements.

2.2.3.4 Fare Collection

Costs for elements in this category are based upon a self-service, barrier-free, proof of payment fare collection system. Ticket vending machines (TVM) costs shall be based on a microprocessor controlled coin or bill accepting machine capable of optionally accepting credit, debit, and stored value cards. Each station platform will have a minimum of two TVMs. Additional machines will be provided at stations where the need is indicated by passenger volumes. The unit cost for fare collection includes all equipment costs, and installation costs. The hardware includes provisions for fare vending facilities and access for the physically handicapped. The unit costs include an allowance for testing, training, and startup.

2.2.4 Stations

Station costs represent the fixed facilities and amenities for transit stations. The passenger station cost estimates are based on parametric unit prices developed for each type of station, which include at-grade and aerial stations, as applicable. Also included in this cost category are parking lots, parking garages or pedestrian overpasses that are adjacent to and part of a passenger station. Generally, all the parametric station cost estimates consist of the following:

- At-grade Stations
 - Station types will be either side or center platform. Platform length will vary by transit technology.
 - All site work, including clearing, demolition, and excavation
 - Grading, borrow fill, and soil stabilization
 - Concrete footings, stem walls, and platform slab
 - Canopy(s) covering one-third of the platform
 - Surface treatment of platform with brick pavers and tactile warning strips.
 - Allowance for benches, signs, artwork, etc.
 - Lighting, electrical, and mechanical allowances
- Aerial Stations
 - Station types will be either side or center platform. Platform length will vary by transit technology.
 - All site work, including clearing, demolition, and excavation
 - Grading, borrow fill, and soil stabilization
 - Concrete footings, columns, pier caps, superstructure, platform slabs, steel reinforcement, and pedestrian barrier
 - Canopy(s) covering one-third of the platform
 - Surface treatment of platform with brick pavers and tactile warning strips.
 - Allowance for benches, signs, artwork, etc.
 - Lighting, electrical, and mechanical allowances
 - Vertical circulation elements (i.e., stairs, escalators and elevators)
 - Employee washroom/janitorial area
 - Equipment room for train control and communication equipment

Any station requirements necessary to function as a multi-modal facility will be included in the special condition category.

2.2.5 Vehicles

This cost category is generally subdivided into revenue and non-revenue vehicles (where non-revenue vehicles include maintenance-of-way vehicles, and agency trucks and automobiles). Revenue vehicles for the alternatives will include costs for the required bus vehicles, rail vehicles, and supervisory/maintenance vehicles.

2.2.6 Special Conditions

Development of a fixed guideway transit system often involves some mitigating requirements that are not directly related to transit system service, but which are required for transit system construction. Special conditions can include items that cannot be adequately represented by a typical section because of complexity, uncertain alignment, special site conditions, or other unique circumstances. Special condition elements can include:

- Utility Relocations
- Demolitions
- Roadway Modifications
- Environmental Mitigation
- Landscaping

2.2.6.1 Utility Relocations

Generally one of the largest cost elements within this cost category is the relocation of existing utilities from within the guideway corridor. These relocations can include both public and private utilities, subject to any agreements that may apply to franchised utilities that exist within public right-of-ways. Typically utility relocation information is not available during alternative evaluation, therefore, the four levels of utility relocation with average unit costs based on historical experience have been defined. These levels will be applied along the various transit alignments based on an evaluation of the complexity of the utility relocations anticipated.

2.2.6.2 Demolitions

This cost element generally include costs for the demolition of special features such as buildings (if not included as part of right-of-way), large structures (bridges or retaining walls), existing railway trackbeds or other unusual existing features.

2.2.6.3 Roadway Modifications

Roadway modifications include all new and reconstructed highways, streets, parking areas or pedestrian walkways (outside of station areas), sidewalks, curbs and gutters, traffic signal coordination, crossing protection, and related facilities associated with construction of rail technologies. The roadway modification cost estimates will be based on parametric unit costs applied to quantities developed on location specific data taken from the conceptual engineering alignment plans.

2.2.6.4 Environmental Mitigation Costs

Any special environmental mitigation costs, such as noise or vibration mitigation or wetlands mitigation, would be included under this category.

2.2.7 Right-of-Way

This cost category covers all land acquisition and acquisition related costs required to obtain various real property needed for the construction, operation, and maintenance of the alternatives. Costs include the fee acquisition of permanent and temporary easements, relocation costs, business damages and other miscellaneous costs. Cost estimates for this category at the conceptual level of evaluation include only

the limited acquisitions identified on the conceptual drawings and land acquisition for a Yard and Shop site. All other construction has been assumed to occur within the existing public rights-of-way.

2.2.8 Project Soft Costs

This cost category includes allowances for preliminary engineering, engineering design, construction management, agency program management, change order contingency, project insurance, and training/start-up/testing costs. These allowances are computed by applying a percentage to the total construction cost estimated for each cost category (excluding right-of-way). The following is a list of the percentage multipliers being applied to the total construction costs to cover these items:

	LRT	BRT
• Preliminary Engineering	4%	4%
• Engineering Design	6%	6%
• Construction Management	8%	8%
• Project Management, Agency/PMC	4%	4%
• Change Order Contingency	7%	7%
• Project Insurance	5%	5%
• Training/Start-Up/Testing	3%	1%

2.2.8.1 Engineering and Management

Engineering and management add-ons include the cost for preliminary engineering, final design, construction management and inspection services, and administration services required to implement each alternative.

2.2.8.2 Project Management, Agency and PMC

The add-on for program/agency management cost includes the costs incurred by a program management consultant as well as the implementing agency in administrating and reviewing the various engineering and management consultants involved in the project.

2.2.8.3 Construction Contingency

A contingency will be applied to the cost estimates to cover the costs of changes in scope or changed conditions that occur during construction.

2.2.8.4 Project Insurance

Project insurance includes all premium costs to provide "wrap-up" insurance coverage through an Owner Controlled Insurance Program (OCIP). This includes professional liability, comprehensive general liability, builder's risk, worker's compensation and employer's liability, construction equipment loss or damage, and automobile insurance. It should be noted that the project will be the subject of a later phase risk analysis by the client, project agent and broker to establish actual insurance costs. The self insurance concept is used here as a means of capturing the cost of insurance.

2.2.8.5 Training/Start-Up/Testing

The add-on for this category includes the costs incurred by the implementing agency in training transit personnel, testing of the new systems, and preparing the system for the beginning of revenue service.

3.0 Cost Data

Cost data will be developed using several sources and will be comparable to those seen in the South Florida region for similar type construction. The cost data will be refined and updated throughout the subsequent design phases up to the selection of the LPA. The first task in developing the cost data is to prepare a list of work items that are typical based on the scope of work for the transit technology alternatives. Unit costs for these work items will then be estimated using various cost references and historical cost data and will be compiled into a database format to form a Unit Cost Library (UCL). The key elements of the UCL are an Item Code, Item Description, Unit of Measure, and Unit Cost. A preliminary UCL is contained in Appendix A. This UCL summary will include, but will not be limited to, those items typically found in a project of this scope. All unit costs include contractor's direct construction cost plus all taxes, general expense, overhead and profit. The unit costs do not include items such as engineering, construction management, owner's administrative costs and allowances for contingencies. These costs will be included as percentage add-ons to the cost estimate under the project soft costs cost category.

3.1 Sources of Cost Data

Unit costs to be included in the estimates will be derived from multiple resources. In addition to Florida Department of Transportation (FDOT) and other local resources, information from other transit systems throughout the United States will be compared and adjusted to specific alternative needs. Unit cost data will be obtained from the Parsons Brinckerhoff's historical cost estimating database of completed projects and their respective historical bid information. All cost resources will be adjusted to reflect current local South Florida rates and conditions.

4.0 Cost Estimating Assumptions

The basic assumptions and criteria used in developing the cost data are as follows:

- The estimates will be prepared using second quarter 2001 dollars.
- No premium time on labor costs will be included.
- Adequate experienced craft labor is available.
- Normal productivity rates as historically experienced will be utilized.
- Compatible trade agreements exist in the region.
- No strike impacts will be experienced by the project.
- There are sufficient experienced contractors available to perform the work.
- Normal South Florida area weather impacts to construction schedule and costs.
- Existing state of the art construction technology will be utilized.

4.1 Design Allowance

A design allowance is included in the estimates to account for the level of design information that is available at this stage of project development. The allowance addresses unforeseen items of work or quantity fluctuations and variances in unit costs that develop as the project progresses through the various stages of development. The percentages used will be reduced as the project progresses through the later preliminary and final stages of design. The design allowance provides a reserve during the early project development stage and reflects the degree of uncertainty associated with the level of engineering data available and design completion achieved for the various design elements. The design allowance is calculated on the total construction costs for the various line items in each cost category and is added to the construction cost since it represents an unknown portion of the expected total construction value. The design allowance percentages that are being used for this design stage are 15 percent for all capital cost categories with the following exception; guideway 25 percent, and special conditions 30 percent.

4.2 Estimating Procedures

Capital costs are to be developed for each alternative by utilizing both “bottom up” and “top down” estimating approaches. Each approach is described in the following sections.

4.2.1 Bottom Up and Top Down Approaches

The majority of composite unit costs utilized for the capital cost estimates will be developed based on a “bottom up” approach. In this approach, the cost of major work elements, as generally defined by typical sections, is determined by totaling the cost of their component parts. Sufficient engineering data is required to reasonably define the scope of work and quantities represented by each typical section. Unit prices, as reflected in the UCL, are developed and combined with the estimated quantities to determine the costs for each major category of work, such as guideway elements, stations, and system elements. The advantage of this approach is the ability to adjust costs for minor changes of scope, as well as the higher confidence level inherent in a bottom up estimate. The disadvantage is the level of engineering and estimating effort required to produce a bottom up estimate and the additional time required to adjust the estimate for revisions.

In the “top down” method, an order-of-magnitude cost is determined, usually derived from data from similar projects, and this cost is used directly or converted to some unit measure (such as route feet) and applied as a unit cost. This method is faster than the bottom up approach; and, for certain technologies and alignment alternatives, the resulting comparative cost estimates can be sufficiently accurate. This method is used as infrequently as possible. As an example, the cost for transit vehicles is generally derived from data from other projects and therefore is a “top down” unit cost. Other systemwide elements, which may not be specifically located, use “top down” unit costs even though a detailed scope serves to support the projected costs. The estimating methodology selected to estimate the alternatives capital cost will use a combination of the two basic procedures described above. The bottom up approach is used to develop parametric unit costs for elements for which discrete quantities can be developed. This approach is typically used for the following cost categories:

- Guideway Elements
- System Elements
- Stations
- Special Conditions (Demolitions and Roadway Modifications)
- Right-of-Way

The top down approach is typically used to estimate costs for the following categories:

- Storage and Maintenance Facility
- Vehicles
- Special Conditions (Utility Relocations and Environmental Mitigation)

4.2.2 Facilities Costing Procedure

The typical facilities costing procedure begins with a typical cross section or sketch of a typical facility such as at-grade guideway. In most cases these typical facilities represent an element which is used more than once in the construction of the alignment. For elements that can be defined by a typical section, unit quantities (such as cubic yards of excavation, or lineal feet of track) required to construct one route foot of the section are computed and unit costs are applied to determine a base cost for constructing a typical route foot. This base cost is augmented by allowances as needed to provide a complete parametric unit cost. To the extent possible, transit guideway sections will be estimated by using typical sections. For certain cost category items a site-specific, non-typical section will require that a unique cost estimate be prepared. For a non-typical facility, the quantities of construction units (such as cubic yards of concrete, or lineal feet of piping required to construct a complete facility are computed and unit costs are applied to determine a base cost for constructing the non-typical facility. This base cost is augmented by allowances as needed to provide a complete parametric unit cost. Special facilities, such as complex structures, major utilities, or special station amenities, will be estimated in a similar fashion as the typical facilities. Sketches will be prepared when practical. In some cases, historical data may be applied if available. In technically challenging problems, some basic data gathering and design may be required to determine an appropriate cost. Once a cost is determined, it will be assigned to its appropriate cost category.

4.2.3 Organization And Management Of Cost Data

The preparation of cost estimates for the alternatives will involve development of a cost information database of considerable size and complexity. Procedures will be developed that streamline the estimating process and allow a thorough review and checking of the cost data in order to avoid clerical and mathematical errors. The proposed procedures include:

- Use of proven computer software for data processing and storage; and
- Development of data in a cost-stream format and subsequently summarizing to higher levels.

All capital cost estimates for the Bay Link alternatives will be prepared using Microsoft Excel 2000. The organization of the cost data into a cost stream format will enable a thorough review and checking of the data with respect to the plan and profile drawings.

4.2.4 Cost Estimating Results Format

The cost estimating methodology uses three levels of cost presentation to provide cost information results in increasing levels of detail. The costs will be developed by alternative and by segment, with each alternative consisting of several segments. The estimating process originates with the Segment Level Cost Estimates, the lowest level of detail summary, which are used to develop Alignment and/or Alternative Level summaries. This approach facilitates responses to different questions and enables users to focus only on the level of detail that meets their needs. These levels provide an efficient and logical flow of data from the most detailed level to the summary level.

The Segment level Cost Estimate is the most detailed level and gives the cost breakdown by category for a single alignment segment. It presents the quantity take-offs in a cost stream format, which keys each element of the estimate to specific locations by stationing. This level relates the quantity take-offs to the plan and profile drawings, helping to document what has been included, thus making reviewing and checking easier than a traditional construction estimate by units. This data is then rolled up to summary level spreadsheets. The summary level Cost Estimate gives cost breakdowns by category for each segment within an alternative. It is at this level that the estimate add-ons will be applied with the appropriate percentages assigned to the various cost categories. The summary will provide a total project cost for a single alternative.

4.2.5 Annualized Cost Factors

The evaluation of the cost effectiveness of an alternative requires that all evaluation measure (capital costs, operations and maintenance costs, non-Federal funding and user benefits) be expressed in annual terms. Since capital costs are estimated as a total expenditure of constant (base year) dollars, an annual payment will be computed that is equivalent to what is in reality a one-time expenditure of capital funds. For each capital cost item, the annualized equivalent will be computed through application of the following annualization factor:

$$\text{Annualization Factor} = \frac{i \times (1+i)^n}{(1+i)^n - 1}$$

where i = discount rate; and
 n = economic life.

The annualized cost of the line item is the total cost of that line item multiplied by its annualization factor. The summation of all annualized line item costs gives the overall annualized cost for the alternative. Table 4-1 contains a list of the various cost categories and their respective economic lifetime and annualization factors. These annualization factors have been determined based on a FTA-prescribed seven percent discount rate.

Table 4-1. Annualization Factors

Description	Lifetime (Years)	Annualization Factor
Guideway	30	0.081
Trackwork	30	0.081
Storage and Maintenance Facilities/OCC	30	0.081
Traction Power	30	0.081
Train Control	30	0.081
Communications	30	0.081
Fare Collection	25	0.086
Passenger Stations	30	0.081
Light Rail Vehicles	30	0.081
Bus Vehicles	12	0.126
Utility Relocations	30	0.081
Roadway Modifications	20	0.094
Right-of-Way	100	0.070

5.0 Estimate Limitations

A reoccurring issue in the estimation of capital cost during the conceptual phase of a project is the evaluation and treatment of uncertainty. Uncertainty can result in a “difference” between the estimated cost of a project as defined during the concept phase and the actual cost of the project that is ultimately implemented. Four potential sources of uncertainty are generally recognized.

- Changes in Project Scope
- Changes in Design Standards
- Incorrect Unit Cost/Quantity Assumptions
- Unforeseen Problems in Implementation

5.1 Changes in Project Scope

During the corridor study phase, preliminary decisions on project scope are made on such issues as vertical and horizontal alignment, degree of grade separation and other significant alignment items. As a project progresses through the various stages of evaluation many of the original project scope definitions that formed the basis of the cost estimate will be updated or revised during the various screening of alternatives.

5.2 Changes in Design Standards

Similar to the broader uncertainties on project scope but generally more specific in nature, changes in design standard during later phases of project development can lead to changes in project cost. Examples of changes in design standards would be replacing high floor vehicles with low floor vehicles, using a more sophisticated signal system, or changing from a barrier free fare collection to fare gates, and so forth.

5.3 Incorrect Unit Cost / Quantity Assumptions

A variety of potential problems exist in the assumptions used in selecting unit cost or unit quantities. Issues that can effect the accuracy of unit cost include local demand for construction labor and its impact on wage rates, bid climate during the construction period and fluctuations in basic material prices. Errors in quantity assumptions are often related to changes in design standards as discussed above.

5.4 Unforeseen Problems in Implementation

Perhaps one of the largest sources of uncertainty is the difficulty in anticipating problems that will only be uncovered in later stages of project development. Areas that appear to be most susceptible are right-of-way acquisition, utility relocations, hazardous materials, and soil conditions. The estimating methods described in Section 2 represent professionally accepted standards for preparing capital cost estimates to a level of accuracy that is consistent with the level of project definition. Accuracy is traditionally expressed as a +/- percentage range around the point estimate that has been produced. The percentage variance factors are greatest in the early stage of project definition and progressively decreases as project definition increases. For example, for typical transit projects, the expected accuracy range of an estimate prepared from final design documents is approximately +10/-5 percent. For projects at a level of project definition from 1 to 15 percent complete, the expected accuracy range is approximately +30/-25 percent.

One of the primary techniques used to address the uncertainties inherent in the estimating process at this phase of project development is the application of appropriate design allowances. The use and application of design allowance is further discussed in Section 4. As a project progresses through subsequent phases, the level of detail in the design will increase and the type, quantity and location of system elements can be better estimated. As that happens, the accuracy of the cost estimates will improve and the design allowance will decrease.

6.0 Capital Cost Estimates

Appendix B, Capital Cost Estimates, includes the segment cost summaries and Level 4 detail for the seven (7) LRT alignment segments. Also included are segment summaries and alternative summaries for the BRT and Enhance Bus Alternatives.

6.1 LRT Alternative Segment Summaries

<u>Miami Segments</u>	<u>Costs (X 1M 2001 \$'s)</u>
A-1—The Hook	\$ 69.5
A-2—The Large Loop	\$ 53.4
A-3—The Small Loop	\$ 45.8
A-4—Mac Arthur Causeway	\$ 111.8
<u>Miami Beach Segments</u>	
B-1—Washington Road	\$ 70.7
B-2—The Loop	\$ 125.0
B-3—Alton Road	\$ 80.4
<u>Systemwide Vehicles</u>	
Segment A-1	\$ 41.6
ALL OTHER Segments	\$ 37.0
Yard and Shops	\$ 22.0

6.2 BRT Alternatives

<u>Alternative</u>	<u>Costs (X 1M 2001 \$'s)</u>
BRT	\$ 100.9
Enhance Bus	\$ 84.4

APPENDIX A

Unit Cost Library

**BAY LINK
MIAMI - MIAMI BEACH TRANSPORTATION CORRIDOR STUDY
UNIT COST LIBRARY**

CODE	DESCRIPTION	2nd Qtr 2001	
		UNIT	UNIT COST \$
01560.01	Traffic Control, Light	lf	\$60.00
01560.02	Traffic Control, Moderate	lf	\$80.00
01560.03	Traffic Control, Heavy	lf	\$150.00
02110.01	Excavation & Removal of Contaminated Soil	cy	\$130.00
02120.01	Environmental Mitigation Allow. - Light	lf	\$20.00
02120.02	Environmental Mitigation Allow. - Moderate	lf	\$50.00
02120.03	Environmental Mitigation Allow. - Heavy	lf	\$80.00
02220.01	Sawcut Asphalt Pavement	lf	\$2.50
02220.02	Sawcut Concrete Pavement	lf	\$4.70
02220.05	Asphaltic Pavement Removal	sy	\$6.00
02220.06	Concrete Pavement Removal	sy	\$15.00
02220.07	Remove Concrete Sidewalk	sy	\$5.00
02220.08	Remove Concrete Curb	lf	\$3.60
02220.99	Miscellaneous Demolition - Crew	hr	\$350.00
02225.01	Site Development Allow. For Stations	sf	\$26.00
02230.01	Clearing & Grubbing, Light	sy	\$0.50
02230.02	Clearing & Grubbing, Moderate	sy	\$0.70
02230.03	Clearing & Grubbing, Heavy	sy	\$1.60
02250.01	Steel Sheet Pile and Shoring	sf	\$28.00
02260.01	Soldier Pile & Lagging Wall incl/Bracing	sf	\$45.00
02260.10	Slurry Concrete Wall 2 ft. Wide	sf	\$115.00
02260.11	Slurry Concrete Wall 3 ft. Wide	sf	\$170.00
02260.50	Street Decking	sf	\$25.00
02310.01	Rough Grading	sf	\$0.40
02310.02	Finish Grading	sf	\$0.60
02310.10	At-Grade Drainage Ditch	lf	\$4.50
02315.01	Regular Excavation	cy	\$6.00
02315.02	Embankment	cy	\$9.00
02315.10	Structural Excavation	cy	\$16.00
02315.11	Structural Backfill	cy	\$25.00
02315.15	Haul and Waste Soil	cy	\$6.00
02315.20	Cut & Cover Excavation	cy	\$20.00
02315.21	Cut & Cover Backfill	cy	\$36.00
02340.01	Geotextile Fabric	sy	\$1.50
02370.01	Erosion Control, Guideway Allowance	lf	\$22.00
02370.02	Erosion Control, Roadway Allowance	lf	\$13.00
02410.01	Tunnel Excavation & Support, Rock	cy	\$180.00
02410.02	Tunnel Excavation & Support, Earth	cy	\$155.00
02410.03	Shaft Excavation & Support, Rock	cy	\$140.00
02410.04	Shaft Excavation & Support, Earth	cy	\$125.00
02410.10	Contact Grouting	cf	\$10.00
02410.20	CIPC, Tunnel Lining	cy	\$500.00
02410.21	CIPC, Shaft Lining	cy	\$450.00
02410.22	Precast Tunnel Lining Segments	sf	\$22.00

CODE	DESCRIPTION	2nd Qtr 2001	
		UNIT	UNIT COST
02410.30	Crosspassage	ea	\$150,000.00
02410.50	Temporary Air, Water, Ventilation	lf	\$20.00
02455.01	Driven Piling	vlf	\$60.00
02465.01	Bored Caisson, 6ft. Dia.	vlf	\$400.00
02465.02	Bored Caisson, 7ft. Dia.	vlf	\$510.00
02465.03	Bored Caisson, 8ft. Dia.	vlf	\$655.00
02465.04	Bored Caisson, 9ft. Dia.	vlf	\$820.00
02465.05	Bored Caisson, 10ft. Dia.	vlf	\$1,000.00
02470.01	OCS Pole Foundations	ea	\$1,500.00
02500.01	Utility Modifications - Rural	lf	\$100.00
02500.02	Utility Modifications - Light Urban	lf	\$350.00
02500.03	Utility Modifications - Moderate Urban	lf	\$650.00
02500.04	Utility Modifications - Heavy Urban	lf	\$1,300.00
02620.01	Wall Drains	lf	\$35.00
02620.02	Underdrains	lf	\$18.00
02630.01	Site / Roadway Drainage, Allowance	lf	\$65.00
02630.09	Trackway Drainage, Ballasted	lf	\$40.00
02630.10	Trackway Drainage, Paved Area	lf	\$50.00
02630.11	Trackway Drainage, Tunnel	lf	\$60.00
02630.12	Trackway Drainage, Aerial	lf	\$30.00
02630.20	Strom Water Management Pond	sy	\$12.00
02720.01	Aggregate Subbase	cy	\$17.00
02720.02	Aggregate Base	cy	\$22.00
02730.01	Cement Stabilized Base	cy	\$50.00
02740.01	Asphalt Treated Base	tn	\$45.00
02740.05	Asphaltic Concrete Pavement	tn	\$50.00
02750.01	Concrete Pavement, Non-reinforced	cy	\$260.00
02750.02	Concrete Pavement, Reinforced	cy	\$300.00
02766.01	Misc. Signing and Stripping, Roadway	lf	\$0.75
02766.02	Misc. Signing and Stripping, Parking Lot	sf	\$0.25
02770.01	Asphalt Concrete Curb	lf	\$2.70
02770.02	Concrete Curb	lf	\$9.00
02770.03	Concrete Curb and Gutter	lf	\$12.00
02770.04	Concrete Gutter	sy	\$20.00
02770.05	Stone Curbs	lf	\$18.00
02770.10	Concrete Ripple Strip	lf	\$30.00
02775.01	Concrete Sidewalk	sy	\$22.00
02780.01	Unit Pavers	sy	\$50.00
02790.01	Precast Concrete Sleeper Beams	ea	\$700.00
02790.02	Precast Concrete Guideway Beams	lf	\$55.00
02810.01	Irrigation System, Moderate	sf	\$0.50
02810.02	Irrigation System, Large	sf	\$0.75
02820.01	6 ft. Chain Link Fence	lf	\$9.00
02820.02	6 ft. Chain Link Fence w/ 3 Strand Barb Wire	lf	\$12.00
02820.03	6 ft. Chain Link Fence, Wall Mounted	lf	\$11.00

CODE	DESCRIPTION	2nd Qtr 2001	
		UNIT	UNIT COST
02820.04	6 ft. Chain Link Fence, Wall Mounted w/ 3 Strand Bard Wire	lf	\$13.00
02830.01	Reinforced Earth Walls (MSE)	sf	\$30.00
02830.05	CIPC, Retaining Wall, Complete	sf	\$55.00
02840.01	Metal Guardrail	lf	\$18.00
02840.05	Concrete Median Barrier	lf	\$35.00
02840.06	Concrete Barrier Wall	cy	\$400.00
02840.10	Precast Sound Wall	sf	\$38.00
02850.01	Bridge Structure, Allowance	sf	\$145.00
02900.01	Landscaping, Moderate	sf	\$1.00
02900.02	Landscaping, Extensive	sf	\$2.50
03210.01	Reinforcing Steel	lb	\$0.60
03210.02	Reinforcing Steel, Epoxy Coated	lb	\$0.75
03210.03	Prestressing Strands	lb	\$2.20
03300.01	CIPC, Footings	cy	\$300.00
03300.02	CIPC, Slab on Grade	cy	\$240.00
03300.03	CIPC, Walls	cy	\$470.00
03300.04	CIPC, Columns	cy	\$750.00
03300.05	CIPC, Beams	cy	\$680.00
03300.06	CIPC, Parapet	cy	\$640.00
03300.07	CIPC, Elevated Slab	cy	\$520.00
03300.08	CIPC, C&C Slab on Grade	cy	\$260.00
03300.09	CIPC, C&C Exterior Walls, Formed 1 Side	cy	\$530.00
03300.10	CIPC, C&C Exterior Walls, Formed 2 Sides	cy	\$600.00
03300.11	CIPC, C&C Interior Walls	cy	\$560.00
03300.12	CIPC, C&C Roof Slab	cy	\$490.00
03300.13	CIPC, Aerial Footing	cy	\$280.00
03300.14	CIPC, Aerial Pier	cy	\$500.00
03300.15	CIPC, Aerial Pier Cap	cy	\$450.00
03300.16	CIPC, Aerial Deck Slab	cy	\$350.00
03300.17	CIPC, Aerial Box Girder	cy	\$800.00
03300.99	CIPC, Miscellaneous Structures	cy	\$700.00
03400.03	Precast Prestressed I Beams	lf	\$120.00
03410.20	Precast Concrete Slabs	sf	\$2.50
03410.21	Precast Prestressed Concrete U Girder	lf	\$275.00
03410.22	Precast Segmental Box Girder, Single	lf	\$1,150.00
03410.23	Precast Segmental Box Girder, Double	lf	\$1,800.00
03410.24	Precast Segmental Box Girder, Long Span	lf	\$2,270.00
03410.25	Precast Barrier Wall	sf	\$12.00
05120.01	Structural Steel, Box Girder	lb	\$1.25
05120.05	Structural Steel, Misc.	lb	\$1.00
05520.01	Metal Pipe and Tube Railing	lf	\$35.00
05650.01	Subballast	cy	\$28.00
05650.02	Ballast	cy	\$32.00
05650.03	Concrete Track Slab	sy	\$75.00
05650.04	Concrete Track Infill	sy	\$40.00
05650.05	Ballasted Trackwork, incl/ Ties, Fasteners & Rail	tf	\$150.00
05650.06	Direct Fixation Trackwork, incl/ Fasteners & Rail	tf	\$200.00
05650.07	Contact Rail, incl/ Cover Board	lf	\$120.00
05650.08	Ballasted Yard Track, incl/ Ties, Fasteners & Rail	tf	\$195.00

CODE	DESCRIPTION	2nd Qtr 2001	
		UNIT	UNIT COST
05650.09	Ballasted Freight Railroad, incl/ Ties, Fasteners & Rail	tf	\$130.00
05650.10	Ballasted Freight Railroad, Relocated	tf	\$120.00
05650.11	Ballasted Freight Railroad, Demolition	tf	\$10.00
05650.15	Embedded Trackwork, incl/ Fasteners & Rail	tf	\$250.00
05650.19	Extruded Rubber Insert	lf	\$7.00
05650.20	Electrical Isolation Membrane	sy	\$110.00
05650.21	Rubber RR Crossing Panels	sy	\$550.00
05650.22	Precast Concrete RR Crossing Panels	lf	\$300.00
05650.30	Permanent Terminal, Ballasted	ea	\$6,000.00
05650.31	Special Trackwork, No. 10 Dbl Crossover,Ballasted	ea	\$300,000.00
05650.32	Special Trackwork, No. 10 Dbl Crossover,DF	ea	\$440,000.00
05650.33	Special Trackwork, No. 8 Dbl Crossover,Ballasted	ea	\$260,000.00
05650.34	Special Trackwork, No. 8 Dbl Crossover,DF	ea	\$380,000.00
05650.35	Special Trackwork, No. 10 Sgl Crossover,Ballasted	ea	\$198,000.00
05650.36	Special Trackwork, No. 10 Sgl Crossover,DF	ea	\$226,000.00
05650.37	Special Trackwork, No. 8 Sgl Crossover,Ballasted	ea	\$147,000.00
05650.38	Special Trackwork, No. 8 Sgl Crossover,DF	ea	\$180,000.00
05650.39	Special Trackwork, No. 20 Turnout,Ballasted	ea	\$162,000.00
05650.40	Special Trackwork, No. 15 Turnout,Ballasted	ea	\$124,000.00
05650.41	Special Trackwork, No. 10 Turnout,Ballasted	ea	\$98,000.00
05650.42	Special Trackwork, No. 8 Turnout,Ballasted	ea	\$74,000.00
05650.43	Special Trackwork, No. 6 Turnout,Ballasted	ea	\$49,000.00
05650.44	Special Trackwork, Yard Turnout,Ballasted	ea	\$21,000.00
05650.45	Special Trackwork, Junction, Non-Grade Sep, Ballasted	ea	\$75,000.00
05650.49	Special Trackwork, No. 8 Turnout,DF	ea	\$95,000.00
05650.52	Special Trackwork, No. 5 Turnout,DF	ea	\$60,000.00
05820.01	Elastomeric Bearing Pads	ea	\$450.00
05820.02	POT Bearing, Single	ea	\$6,000.00
05820.03	POT Bearing, Double	ea	\$8,000.00
07130.21	Sheet Waterproofing	sf	\$3.50
07170.21	Bentonite Waterproofing, Vertical	sf	\$5.50
07170.22	Bentonite Waterproofing, Horizontal	sf	\$4.60
09000.01	Architectural Finish, Station Platform	sf	\$45.00
09000.02	Platform Edge	sf	\$35.00
09000.03	Curtain Wall	sf	\$20.00
10100.01	Signage, Stations	sta	\$10,000.00
10100.02	Signage, BRT Station	sta	\$7,000.00
10100.03	Signage, Guideway	lf	\$12.00
10500.01	Station Canopy	sf	\$85.00
11155.01	Fare Collection, Reversible Gate	ea	\$113,000.00
11155.02	Fare Collection, Farecard Vendor	ea	\$118,000.00
11155.03	Fare Collection, Money Changer	ea	\$12,000.00
11155.10	Fare Collection, Ticket Vending Machine	ea	\$60,000.00
11155.11	Fare Collection, Validating Machine	ea	\$5,000.00
11155.20	Fare Collection, Installation & Testing	ea	\$10,000.00
12000.01	Station Furnishings, Center Platform (Allowance)	sta	\$50,000.00
12000.02	Station Furnishings, Side Platform (Allowance)	sta	\$90,000.00
13000.01	Maintenance Building	sf	\$250.00
13000.02	Operations Building	sf	\$180.00

CODE	DESCRIPTION	2nd Qtr 2001	
		UNIT	UNIT COST
13000.03	Chemical/Equipment Storage	sf	\$160.00
13000.04	Body/Paint Shop	sf	\$150.00
13000.05	Car Wash Building	sf	\$170.00
13000.06	Service Bays	sf	\$140.00
13000.08	BRT Bus Operator Welfare Building	sf	\$130.00
13000.09	BRT Transfer Facility Building	sf	\$200.00
13000.10	Pedestrian Access Structure	sf	\$120.00
13000.20	Traction Power Structure, Substation	ea	\$180,000.00
13100.01	Wheel Truing Machine	ea	\$1,500,000.00
13100.02	Wheel Axle Press Machine	ea	\$560,000.00
13100.03	Turntables	ea	\$60,000.00
13100.04	Cranes, 10-Ton	ea	\$70,000.00
13100.05	Car Body Hoist	ea	\$880,000.00
13100.06	Truck Repair Hoist	ea	\$170,000.00
13200.01	Mineral Spirits Tank	ea	\$45,000.00
13200.02	Waste Oil Tank	ea	\$55,000.00
13300.01	Paint Shop Equipment	ls	\$180,000.00
13300.02	Wash Equipment	ls	\$280,000.00
13300.03	Misc. Office and Shop Equipment	ls	\$650,000.00
14600.01	Escalators, to 25 ft. Rise	ea	\$200,000.00
14600.02	Escalators, 36 ft. to 40 ft. Rise	ea	\$380,000.00
14600.03	Escalators, 56 ft. to 60 ft. Rise	ea	\$532,000.00
14600.04	Escalators, 71 ft. to 80 ft. Rise	ea	\$638,400.00
14600.05	Escalators, 111 ft. to 120 ft. Rise	ea	\$893,760.00
14600.09	Elevators, 25 ft. Rise	ea	\$100,000.00
14600.10	Elevators, 40 ft. Rise	ea	\$140,000.00
14600.11	Elevators, 75 ft. Rise	ea	\$182,000.00
14600.12	Elevators, 110 ft. Rise	ea	\$218,400.00
14600.20	Stairs Complete, Std. Width	vf	\$700.00
14600.21	Stairs Complete, Wide	vf	\$1,200.00
15300.01	Fire Protection Piping, Tunnel	lf	\$60.00
15400.01	Pumping Station (Tunnel / Cut & Cover)	ea	\$250,000.00
15700.02	Subsurface Ventilation	lf	\$350.00
15700.10	Ventilation Equipment (Allowance)	ea	\$500,000.00
15800.01	Station Mechanical (Allowance)	sf	\$20.00
16000.01	Station Electrical (Allowance)	sf	\$40.00
16060.01	Corrosion Control, At-Grade	lf	\$1.50
16060.02	Corrosion Control, Aerial	lf	\$2.00
16130.21	Ductbank, At Grade Guideway	lf	\$35.00
16130.22	Ductbank, Aerial Guideway	lf	\$75.00
16130.23	Ductbank, Tunnel Guideway	lf	\$55.00
16370.01	Traction Power Equipment, Substation	ea	\$570,000.00
16370.04	Traction Power Supply, Trunkline	lf	\$40.00
16370.05	Traction Power Supply, Branchline	lf	\$35.00
16370.06	Traction Power Supply, (OCS), At-Grade, Single Track	lf	\$70.00
16370.07	Traction Power Supply, (OCS), At-Grade, Double Track	lf	\$120.00
16500.01	Lighting, At Grade Guideway	lf	\$40.00
16500.02	Lighting, Aerial Guideway	lf	\$55.00
16500.03	Lighting, Cut & Cover Guideway	lf	\$160.00

CODE	DESCRIPTION	2nd Qtr 2001	
		UNIT	UNIT COST
16500.04	Lighting, Tunnel Guideway	lf	\$160.00
16500.05	Lighting, Stations (Allowance)	sf	\$7.00
16500.06	Lighting, Roadway	lf	\$25.00
16500.07	Lighting, Area	sf	\$2.50
16700.01	Train Control, Line	lf	\$115.00
16700.02	Train Control, Station	ea	\$75,000.00
16700.03	Train Control, Yard	lf	\$140.00
16700.04	Train Control, Turnout	ea	\$100,000.00
16700.05	Train Control, Double Crossover	ea	\$162,500.00
16700.06	Train Control, Single Crossover	ea	\$112,500.00
16700.07	Train Control, Yard Crossover	ea	\$77,500.00
16700.08	Communication, Line	lf	\$30.00
16700.09	Communication, Station	ea	\$200,000.00
16700.10	Communication, Yard	ea	\$1,700,000.00
16700.11	Highway Crossing Signals, Preemptive	ea	\$120,000.00
16700.12	Highway Crossing Signals, Preferential	ea	\$200,000.00
16700.13	Crossing Gates with Flashers, New	ea	\$110,000.00
16700.14	Crossing Gates with Flashers, Relocated	ea	\$90,000.00
16700.15	Pedestrian Crossing Signals	ea	\$75,000.00
16700.20	Traffic Signal - Existing	ea	\$80,000.00
16700.21	Traffic Signal - New	ea	\$120,000.00
16800.01	Train Control, Commuter Line	lf	\$25.00
16800.05	Train Control, Commuter - Turnout	ea	\$150,000.00
17100.01	LRT Vehicles, Low Floor Cars	ea	\$2,000,000.00
17100.02	Maintenance of Way, Vehicles & Equipment	ls	\$1,300,000.00
17100.03	Standard 35 ft. Bus	ea	\$270,000.00
17100.04	Standard 40 ft. Bus	ea	\$295,000.00
17100.05	Articulated 60 ft. Bus	ea	\$375,000.00
17100.10	Diesel Locomotive	ea	\$3,465,000.00
17100.11	Passenger Car	ea	\$1,890,000.00

**MIAMI-DADE TRANSPORTATION AUTHORITY
DOWNTOWN-MIAMI BEACH LIGHT RAIL
COMPOSITE SECTION COSTS**

CODE	DESCRIPTION	2nd Qtr 2001	
		UNIT	UNIT COST \$
	GUIDEWAY:		
BRT1.100	Dedicated Busway	RF	\$317
BRT1.150	Mixed Flow Busway - Sngl Curb Lane	RF	\$24
BRT1.152	Mixed Flow Busway - Dbl Curb Lane	RF	\$46
BRT1.155	Mixed Flow Busway - Median	RF	\$47
BRT1.205	Dedicated Busway-Fill (5ft)	RF	\$351
BRT1.215	Dedicated Busway-Fill (15ft)	RF	\$664
BRT1.220	Dedicated Busway-Fill (20ft)	RF	\$920
BRT1.225	Dedicated Busway-Fill (25ft)	RF	\$1,242
BRT1.230	Dedicated Busway-Fill (30ft)	RF	\$1,630
BRT1.235	Dedicated Busway-Fill (35ft)	RF	\$2,083
BRT1.240	Dedicated Busway-Fill (40ft)	RF	\$2,603
BRT1.305	Dedicated Busway-Ret Fill (5ft)	RF	\$574
BRT1.315	Dedicated Busway-Ret Fill (15ft)	RF	\$1,718
BRT1.320	Dedicated Busway-Ret Fill (20ft)	RF	\$2,635
BRT1.325	Dedicated Busway-Ret Fill (25ft)	RF	\$3,307
BRT1.330	Dedicated Busway-Ret Fill (30ft)	RF	\$3,979
BRT1.335	Dedicated Busway-Ret Fill (35ft)	RF	\$4,652
BRT1.340	Dedicated Busway-Ret Fill (40ft)	RF	\$5,324
BRT1.405	Dedicated Busway-Cut (5ft)	RF	\$386
BRT1.415	Dedicated Busway-Cut (15ft)	RF	\$585
BRT1.420	Dedicated Busway-Cut (20ft)	RF	\$718
BRT1.425	Dedicated Busway-Cut (25ft)	RF	\$873
BRT1.430	Dedicated Busway-Cut (30ft)	RF	\$1,049
BRT1.505	Dedicated Busway-Ret Cut (5ft)	RF	\$515
BRT1.515	Dedicated Busway-Ret Cut (15ft)	RF	\$1,397
BRT1.520	Dedicated Busway-Ret Cut (20ft)	RF	\$2,182
BRT1.525	Dedicated Busway-Ret Cut (25ft)	RF	\$2,723
BRT1.530	Dedicated Busway-Ret Cut (30ft)	RF	\$3,264
BRT1C.100	Dedicated Busway - Single Lane	RF	\$233
BRT1C.200	Dedicated Busway - Arterial Median w/ barrier wall	RF	\$469
BRT3B.100	Freeway Shoulder Bus Lane -- Restricted ROW	RF	\$164
BRT6.100	Dedicated Busway - Arterial Median w Thru Lanes	RF	\$380
BRT6.200	Dedicated Busway - Arterial Median w/o Thru Lanes	RF	\$208
BRT6.300	Dedicated Busway - Arterial Median w Landscaping	RF	\$464

CODE	DESCRIPTION	2nd Qtr 2001	
		UNIT	UNIT COST \$
BRT6C.100	Dedicated Busway - Arterial Curb Lanes	RF	\$328
	GUIDEWAY: Con't		
BRT21A.100	Dedicated Busway - Cut & Cover, Single	RF	\$3,800
BRT21A.200	Dedicated Busway - Cut & Cover, Double	RF	\$4,719
BRT22.100	Dedicated Busway - Aerial Structure - Single Bus Lane	RF	\$2,640
BRT22.200	Dedicated Busway - Aerial Structure - Two Bus Lanes	RF	\$3,255
	STATIONS:		
BRT21A.300	Dedicated Busway - Cut & Cover, Station	LS	\$1,211,703
BRT24.100	Dedicated Busway - High Volume Station	LS	\$882,022
BRT30.100	Arterial Bus Lane Platform	LS	\$252,903
BRT30.110	Arterial Bus Lane Station	LS	\$505,805
BRT32.100	Arterial Mixed Flow Bus Stop	LS	\$69,113
BRT24.300	Pedestrian Access to Station	LS	\$125,000
BRT24.310	Pedestrian Overpass	LS	\$294,331
BRT24.320	Pedestrian Underground	LS	\$274,573
BRT24.350	Pedestrian Link - sidewalk/ft	LF	\$17
BRT50.100	Surface Parking	STL	\$2,178

BAY LINK
MIAMI - MIAMI BEACH TRANSPORTATION CORRIDOR STUDY
COMPOSITE SECTION COSTS

CODE	DESCRIPTION	2nd Qtr 2001	
		UNIT	UNIT COST \$
	GUIDEWAY:		
AG01	At-Grade Ballasted Track - Open	RF	\$249
AG02	At-Grade Ballasted Track - Adjacent to Street	RF	\$384
AG03	At-Grade Ballasted Track - Street Median	RF	\$773
AG04	At-Grade Ballasted Track - Street Median (Transition at Stations)	RF	\$817
AG05	At-Grade Ballasted Track - Street Median (At Stations)	RF	\$862
AG09	At-Grade Ballasted Track - Highway Median	RF	\$439
AG10	At-Grade Ballasted Track - Curb Side Lanes	RF	\$466
AG11	At-Grade Ballasted Track - Railroad Corridor	RF	\$203
AG12	At-Grade Ballasted Track - Rail/Highway Crossing	RF	\$249
AG20	At-Grade Embedded Single Track	RF	\$516
AG21	At-Grade Embedded Double Track	RF	\$861
AG31	At-Grade Street Running Sngl Track - Curb Side Lanes	RF	\$548
AG40	At-Grade Street Running Track in Median	RF	\$852
AG41	At-Grade Street Running Track - Curb Side Lanes	RF	\$940
AG42	At-Grade Street Running Track - Adjacent to Street	RF	\$337
AG51	Commuter Rail Ballasted Track - Single Track	RF	\$79
AG52	Commuter Rail Ballasted Track - Single Track w/ Siding	RF	\$125
AG53	Commuter Rail Ballasted Track - Single Industrial Siding	RF	\$86
RC01	Retained Cut - One Side (Avg. 10' Depth)	RF	\$1,502
RC02	Retained Cut - One Side (Avg. 20' Depth)	RF	\$2,675
RC21	Retained Cut - Two Sides (Avg. 10' Depth)	RF	\$3,151
RC22	Retained Cut - Two Sides (Avg. 20' Depth)	RF	\$5,371
RC32	Retained Cut - U-Wall (Avg. 20' Depth)	RF	\$5,611
RC41	Retained Cut - One Side in Railroad Corridor (Avg. 10' Depth)	RF	\$1,518
RF01	Retained Fill - One Side (Avg. 10' Height)	RF	\$621
RF02	Retained Fill - One Side (Avg. 20' Height)	RF	\$948
RF12	Retained Fill - Twin Dbl Side (Avg. 20' Height)	RF	\$3,236
RF21	Retained Fill - Two Sides (Avg. 10' Height)	RF	\$1,117
RF22	Retained Fill - Two Sides (Avg. 20' Height)	RF	\$1,853
RF32	Retained Fill - Sngl, Two Sides (Avg. 20' Height)	RF	\$1,742

CODE	DESCRIPTION	2nd Qtr 2001	
		UNIT	UNIT COST \$
	GUIDEWAY: (CON'T)		
RF90	Retaining Wall, One Side Only (Avg. 10' Height)	RF	\$686
CF01	Retained Cut and Fill (Avg. 10' Height)	RF	\$2,327
CF02	Retained Cut and Fill (Avg. 20' Height)	RF	\$3,992
BR01	Bridge Structure, Sgl Track	RF	\$1,745
BR02	Bridge Structure, Dbl track	RF	\$2,829
EL02	Sgl. Precast Segmental Box Girder (Avg. Pier 20' Ht.)	RF	\$1,973
EL03	Sgl. Precast Segmental Box Girder (Avg. Pier 30' Ht.)	RF	\$2,027
EL22	Dbl. Precast Segmental Box Girder (Avg. Pier 20' Ht.)	RF	\$2,801
EL23	Dbl. Precast Segmental Box Girder (Avg. Pier 30' Ht.)	RF	\$2,875
EL24	Dbl. Precast Segmental Box Girder (Avg. Pier 40' Ht.)	RF	\$2,992
EL28	Dbl. Precast Segmental Box Girder (River Crossing)	RF	\$3,890
EL33	Twin - Sngl. Precast AASHTO Girder (Avg. Pier 30' Ht.)	RF	\$2,658
EL34	Twin - Sngl. Precast AASHTO Girder (Avg. Pier 40' Ht.)	RF	\$2,794
EL42	Dbl. Precast AASHTO Girder (Avg. Pier 20' Ht.)	RF	\$2,157
EL43	Dbl. Precast AASHTO Girder (Avg. Pier 30' Ht.)	RF	\$2,268
EL44	Dbl. Precast AASHTO Girder (Avg. Pier 40' Ht.)	RF	\$2,378
EL45	Dbl. Precast AASHTO Girder (Avg. Pier 50' Ht.)	RF	\$2,489
CC03	Cut and Cover Twin Tunnel (Avg. 30' Depth)	RF	\$10,517
TL05	Earth Tunnel - Single (41'-6" O.D.)	RF	\$13,836
VS01	Fan / Vent Shaft Equipment	EA	\$500,000
VS05	Fan / Vent Shaft (18' O.D.)	VF	\$3,460
ES05	Emergency Access Shaft (24' O.D.)	VF	\$5,920
PS01	Pumping Station	EA	\$250,000
	TRACKWORK:		
TK01	Ballasted - Single Track	RF	\$182
TK02	Ballasted - Double Track	RF	\$351
TK10	Paved - Single Track	RF	\$335
TK11	Paved - Double Track	RF	\$670
TK20	Direct Fixation - Single Track	RF	\$200
TK21	Direct Fixation - Double Track	RF	\$400
SP02	At-Grade Double Roadway Crossing	RF	\$600
SP08	Ballasted - Double Cross-over (Std.)	EA	\$260,000
SP12	Ballasted - Double Cross-over (Wide)	EA	\$312,000

CODE	DESCRIPTION	2nd Qtr 2001	
		UNIT	UNIT COST \$
	TRACKWORK: (CON'T)		
SP14	Ballasted - Pocket Track	RF	\$860
SP16	Ballasted - Turnout	EA	\$124,000
SP18	Direct Fixation - Double Cross-over	EA	\$380,000
SP20	Direct Fixation - Pocket Track	RF	\$1,117
SP28	Direct Fixation - Turnout	EA	\$95,000
	YARDS AND SHOPS:		
YS02	Layover Facility	LS	\$1,374,966
YS10	Rail Maintenance Facility (200 Car)	LS	\$35,466,792
	TRAIN CONTROL:		
TC01	Train Control - Single Track	RF	\$115
TC02	Train Control - Double Track	RF	\$230
TC05	Train Control, Line - Yard	RF	\$140
TC10	Train Control, Station	EA	\$75,000
TC15	Train Control, Double Crossover	EA	\$162,500
TC20	Train Control, Single Crossover	EA	\$112,500
TC25	Train Control, Turnout	EA	\$100,000
TC81	Train Control, Commuter Rail	RF	\$25
TC85	Train Control, Turnout Commuter Rail	EA	\$150,000
	TRACTION POWER:		
TP01	Traction Power - Single Track	RF	\$226
TP02	Traction Power - Double Track	RF	\$276
	COMMUNICATIONS:		
CM01	Communication, Line - Single	RF	\$30
CM02	Communication, Line - Double	RF	\$60
CM05	Communication, Station	EA	\$200,000
	FARE COLLECTION:		
FC01	Fare Collection - Center Platform Station	EA	\$185,000
FC02	Fare Collection - Side Platform Station	EA	\$340,000
FC03	Fare Collection - Single Side Platform Station	EA	\$170,000
FC81	Fare Collection - Commuter Rail Station	EA	\$155,000
	PASSENGER STATIONS:		
ST01	At-Grade - Center Platform	LS	\$879,600
ST02	At-Grade - Side Platform	LS	\$1,083,097

CODE	DESCRIPTION	2nd Qtr 2001	
		UNIT	UNIT COST \$
ST03	At-Grade - Center Platform in Highway Median	LS	\$1,474,036
ST04	At-Grade - Side Platform - Street Running in Median	LS	\$1,236,623
ST05	At-Grade - Single Side Platform - Street Running	LS	\$673,970
ST11	Elevated - Center Platform w/ Mezzanine At-Grade	LS	\$4,463,736
ST12	Elevated - Side Platform w/ Mezzanine At-Grade	LS	\$5,082,136
ST80	At-Grade - Commuter Rail Platform	LS	\$822,121
PA01	Station Pedestrian Access Bridge	LF	\$3,875
PA05	Station Pedestrian Access Cut & Cover Tunnel	LF	\$7,052
PA20	Station Pedestrian Vertical Access - Elevated	EA	\$1,068,080
SF02	Station Site Facilities - Surface Parking	SP	\$2,178
SF05	Station Site Facilities - Bus / Shuttle Bays	SP	\$2,627
SF20	Station Site Facilities - Parking Garage	SP	\$10,493
SPECIAL CONDITIONS:			
UM01	Utility Modifications Allowance - Light	RF	\$100
UM02	Utility Modifications Allowance - Light Urban	RF	\$350
UM03	Utility Modifications Allowance - Moderate Urban	RF	\$650
UM04	Utility Modifications Allowance - Heavy Urban	RF	\$1,300
UM80	Utility Modifications Allowance - Existing RR Corridor	RF	\$10
DM01	Demolition Allowance - Existing Bridge Structure	SF	\$7.20
DM10	Demolition Allowance - Existing Station Structure	SF	\$75.60
DM80	Demolition Allowance - Existing Paved Area	SF	\$6.47
RM01	Roadway Modifications Allowance - Under Aerial Structure	RF	\$309.73
RM10	Roadway Modifications Allowance - Adding 1 Lane	LnF	\$214.53
RM20	Roadway Modifications Allowance - Existing Signal	EA	\$80,000
RM21	Roadway Modifications Allowance - New Signal	EA	\$120,000
RM80	Roadway Modifications Allowance - AC Paving for BRT	SF	\$14.79
RM81	Roadway Modifications Allowance - Conc. Paving for BRT	SF	\$23.36
RM82	Roadway Modifications Allowance - AC Paving (incl. Curb & Sidewalk)	SF	\$21.02
RM90	Roadway Modifications Allowance - Adding New Bridge	SF	\$104.95
EM01	Environmental Mitigation Allowance - Light	RF	\$20.00
EM02	Environmental Mitigation Allowance - Moderate	RF	\$50.00
EM03	Environmental Mitigation Allowance - Heavy	RF	\$80.00
LS02	Landscaping Allowance - Site	SF	\$3.25
LS10	Landscaping Allowance - Guideway	RF	\$17.50

APPENDIX B

Capital Cost Estimate

BAY LINK
MIAMI - MIAMI BEACH TRANSPORTATION CORRIDOR
Light Rail - Downtown Miami to Miami Beach Via MacArthur Causeway
Capital Cost Estimate
(2001 Dollars in Millions)

Description	Segment A-1	Segment A-2	Segment A-3	Segment A-4	Segment B-1	Segment B-2	Segment B-3	Maintenance Facility	Vehicles Seg A-1	Vehicles All Other Seg
Length (RF):	9,250	11,650	10,090	18,054	10,600	22,536	11,400			
Number of Stations:	10	9	8	4	6	12	8			
Number of Vehicles:									18	16
1.0 Guideway Elements										
1.1 Guideway	\$11.0	\$8.0	\$6.9	\$41.3	\$13.4	\$22.5	\$12.7			
1.2 Trackwork	\$6.8	\$4.5	\$3.9	\$8.7	\$8.8	\$14.5	\$9.4			
2.0 Yards & Shops										
2.0 Yard & Shop								\$22.0		
3.0 System Elements										
3.1 Train Control	\$3.7	\$2.3	\$2.0	\$5.7	\$3.7	\$6.3	\$4.1			
3.2 Traction Power	\$3.7	\$3.0	\$2.6	\$5.7	\$3.4	\$6.6	\$3.6			
3.3 Communications	\$2.9	\$2.5	\$2.2	\$2.2	\$2.1	\$4.0	\$2.6			
3.4 Fare Collection	\$2.4	\$1.8	\$1.6	\$0.9	\$1.2	\$3.5	\$2.9			
4.0 Passenger Stations										
4.0 Passenger Stations	\$9.2	\$7.0	\$6.2	\$9.7	\$8.1	\$13.4	\$11.0			
5.0 Vehicles										
5.0 Revenue Vehicles									\$41.6	\$37.0
6.0 Special Conditions										
6.1 Utility Modifications	\$5.9	\$5.3	\$4.6	\$6.3	\$4.8	\$10.3	\$5.2			
6.2 Demolitions	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0			
6.3 Roadway Modifications	\$3.6	\$3.2	\$2.2	\$0.0	\$4.7	\$7.9	\$5.6			
6.4 Environmental Mitigation	\$1.4	\$1.2	\$1.1	\$0.9	\$1.1	\$2.3	\$1.2			
6.5 Landscaping	\$0.3	\$0.3	\$0.2	\$0.3	\$0.2	\$0.5	\$0.3			
Subtotal Construction Costs	\$50.8	\$39.0	\$33.5	\$81.6	\$51.6	\$91.8	\$58.7	\$22.0	\$41.6	\$37.0
7.0 Right-of-Way										
7.0 Right-of-Way	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$5.7		

BAY LINK
MIAMI - MIAMI BEACH TRANSPORTATION CORRIDOR
Light Rail - Downtown Miami to Miami Beach Via MacArthur Causeway
Capital Cost Estimate
(2001 Dollars in Millions)

Description		Segment A-1	Segment A-2	Segment A-3	Segment A-4	Segment B-1	Segment B-2	Segment B-3	Maintenance Facility	Vehicles Seg A-1	Vehicles All Other Seg
8.0 Soft Costs (Calculated on Construction Cost Only)											
8.1 Preliminary Engineering	4.0%	\$2.03	\$1.56	\$1.3	\$3.27	\$2.07	\$3.67	\$2.35	\$0.88	\$1.66	\$1.48
8.2 Engineering Design	6.0%	\$3.05	\$2.34	\$2.0	\$4.90	\$3.10	\$5.51	\$3.52	\$1.32	\$2.49	\$2.22
8.3 Construction Management	8.0%	\$4.06	\$3.12	\$2.7	\$6.53	\$4.13	\$7.35	\$4.69	\$1.76	\$3.33	\$2.96
8.4 Project Management, Agency/PMC	4.0%	\$2.03	\$1.56	\$1.3	\$3.27	\$2.07	\$3.67	\$2.35	\$0.88	\$1.66	\$1.48
8.5 Change Order Contingency	7.0%	\$3.55	\$2.73	\$2.3	\$5.71	\$3.61	\$6.43	\$4.11	\$1.54	\$2.91	\$2.59
8.6 Project Insurance	5.0%	\$2.54	\$1.95	\$1.7	\$4.08	\$2.58	\$4.59	\$2.93	\$1.10	\$2.08	\$1.85
8.7 Training/Start-Up/Testing	3.0%	\$1.52	\$1.17	\$1.0	\$2.45	\$1.55	\$2.76	\$1.76	\$0.66	\$1.25	\$1.11
Subtotal Soft Costs	LS	\$18.8	\$14.4	\$12.4	\$30.2	\$19.1	\$34.0	\$21.7	\$8.1	\$15.4	\$13.7
Grand Total (\$2001)		\$69.5	\$53.4	\$45.8	\$111.8	\$70.7	\$125.8	\$80.4	\$35.8	\$57.0	\$50.6

BAY LINK
MIAMI - MIAMI BEACH TRANSPORTATION CORRIDOR
Segment A-1
Sta. 150+00 to Sta. 242+50

TECHNOLOGY ALTERNATIVE: LRT

STATIONING				COST		UNIT	BASE	DESIGN	TOTAL
BEGIN	END	DESCRIPTION	ID	QTY	UNIT	COST	COST	ALLOWANCE	COST
1.0 GUIDEWAY ELEMENTS									
1.1 GUIDEWAY									
150+00	- 180+00	At-Grade Ballasted Track - Street Median	AG03	3,000	RF	\$773	\$2,319,120	25%	\$2,898,900
180+00	- 205+00	At-Grade Street Running Track - Curb Side Lanes	AG41	2,500	RF	\$940	\$2,349,900	25%	\$2,937,375
205+00	- 242+50	At-Grade Street Running Sngl Track - Curb Side Lanes	AG31	3,750	RF	\$548	\$2,056,313	25%	\$2,570,391
205+00	- 242+50	* At-Grade Street Running Sngl Track - Curb Side Lanes	AG31	3,750	RF	\$548	\$2,056,313	25%	\$2,570,391
Total Guideway				9,250	RF		\$8,781,645		\$10,977,056
1.2 TRACKWORK									
150+00	- 180+00	Ballasted - Double Track	TK02	3,000	RF	\$351	\$1,053,600	15%	\$1,211,640
180+00	- 205+00	Paved - Double Track	TK11	2,500	RF	\$670	\$1,676,150	15%	\$1,927,573
205+00	- 242+50	Paved - Single Track	TK10	3,750	RF	\$335	\$1,257,075	15%	\$1,445,636
205+00	- 242+50	* Paved - Single Track	TK10	3,750	RF	\$335	\$1,257,075	15%	\$1,445,636
		Ballasted - Double Cross-over (Std.)	SP08	1	EA	\$260,000	\$260,000	15%	\$299,000
		Direct Fixation - Double Cross-over	SP18	1	EA	\$380,000	\$380,000	15%	\$437,000
Total Trackwork				9,250	RF		\$5,883,900		\$6,766,485
3.0 SYSTEM ELEMENTS									
3.1 TRAIN CONTROL									
150+00	- 205+00	Train Control - Double Track	TC02	5,500	RF	\$230	\$1,265,000	15%	\$1,454,750
205+00	- 242+50	Train Control - Single Track	TC01	3,750	RF	\$115	\$431,250	15%	\$495,938
205+00	- 242+50	* Train Control - Single Track	TC01	3,750	RF	\$115	\$431,250	15%	\$495,938
		Train Control, Station	TC10	10	EA	\$75,000	\$750,000	15%	\$862,500
		Train Control, Double Crossover	TC15	2	EA	\$162,500	\$325,000	15%	\$373,750
Total Train Control				9,250	RF		\$3,202,500		\$3,682,875
3.2 TRACTION POWER									
150+00	- 205+00	Traction Power - Double Track	TP02	5,500	RF	\$276	\$1,518,000	15%	\$1,745,700
205+00	- 242+50	Traction Power - Single Track	TP01	3,750	RF	\$226	\$847,500	15%	\$974,625
205+00	- 242+50	* Traction Power - Single Track	TP01	3,750	RF	\$226	\$847,500	15%	\$974,625
Total Traction Power				9,250	RF		\$3,213,000		\$3,694,950
3.3 COMMUNICATIONS									
150+00	- 205+00	Communication, Line - Double	CM02	5,500	RF	\$60	\$330,000	15%	\$379,500
205+00	- 242+50	Communication, Line - Single	CM01	3,750	RF	\$30	\$112,500	15%	\$129,375

Segment A-1

STATIONING		DESCRIPTION	COST ID	QTY	UNIT	UNIT COST	BASE COST	DESIGN ALLOWANCE		TOTAL COST
BEGIN	END									
205+00	-	242+50	*	Communication, Line - Single		CM01 3,750	RF \$30	\$112,500	15%	\$129,375
				Communication, Station		CM05 10	EA \$200,000	\$2,000,000	15%	\$2,300,000
				Total Communications		13,000	RF	\$2,555,000		\$2,938,250
3.4 FARE COLLECTION										
				Fare Collection - Center Platform Station		FC01 2	EA \$185,000	\$370,000	15%	\$425,500
				Fare Collection - Side Platform Station		FC02 2	EA \$340,000	\$680,000	15%	\$782,000
				Fare Collection - Single Side Platform Station		FC03 6	EA \$170,000	\$1,020,000	15%	\$1,173,000
				Total Fare Collection		1	LS	\$2,070,000		\$2,380,500
4.0 PASSENGER STATIONS										
				Overtown Sta.		ST01 1	LS \$879,600	\$879,600	15%	\$1,011,541
				Government Center Sta.		ST01 1	LS \$879,600	\$879,600	15%	\$1,011,541
				Miami Ave. Sta.		ST02 1	LS \$1,083,097	\$1,083,097	15%	\$1,245,561
				2nd Ave. Sta.		ST02 1	LS \$1,083,097	\$1,083,097	15%	\$1,245,561
				Bayfront Station		ST05 1	LS \$673,970	\$673,970	15%	\$775,066
				Bayside Station		ST05 1	LS \$673,970	\$673,970	15%	\$775,066
				AA Arena Sta.		ST05 1	LS \$673,970	\$673,970	15%	\$775,066
				Bayfront Station		ST05 1	LS \$673,970	\$673,970	15%	\$775,066
				Bayside Station		ST05 1	LS \$673,970	\$673,970	15%	\$775,066
				AA Arena Sta.		ST05 1	LS \$673,970	\$673,970	15%	\$775,066
				Total Passenger Stations		1	LS	\$7,969,215		\$9,164,597
6.0 SPECIAL CONDITIONS										
6.1 UTILITY MODIFICATIONS										
150+00	-	205+00		Utility Modifications Allowance - Light Urban		UM02 5,500	RF \$350	\$1,925,000	30%	\$2,502,500
205+00	-	242+50		Utility Modifications Allowance - Light Urban		UM02 3,750	RF \$350	\$1,312,500	30%	\$1,706,250
205+00	-	242+50	*	Utility Modifications Allowance - Light Urban		UM02 3,750	RF \$350	\$1,312,500	30%	\$1,706,250
				Total Special Conditions		9,250	RF	\$4,550,000		\$5,915,000
6.2 DEMOLITIONS										
				None						
				Total Demolitions				\$0		\$0
6.3 ROADWAY MODIFICATIONS										
				Roadway Modifications Allowance - Existing Signal		RM20 21	EA \$80,000	\$1,680,000	30%	\$2,184,000
				Roadway Modifications Allowance - New Signal		RM21 9	EA \$120,000	\$1,080,000	30%	\$1,404,000
				Total Roadway Modifications				\$2,760,000		\$3,588,000
6.4 ENVIRONMENTAL MITIGATION										
150+00	-	205+00		Environmental Mitigation Allowance - Heavy		EM03 5,500	RF \$80	\$440,000	30%	\$572,000
205+00	-	242+50		Environmental Mitigation Allowance - Heavy		EM03 3,750	RF \$80	\$300,000	30%	\$390,000

Segment A-1

STATIONING		COST		DESCRIPTION	ID	UNIT	BASE	DESIGN	TOTAL	ALLOWANCE	COST
BEGIN	END					QTY	UNIT	COST	COST		
205+00	- 242+50	*		Environmental Mitigation Allowance - Heavy	EM03	3,750	RF	\$80	\$300,000	30%	\$390,000
				Total Environmental Mitigation		9,250	RF		\$1,040,000		\$1,352,000
6.5 LANDSCAPING											
150+00	- 205+00			Landscaping Allowance - Guideway	LS10	5,500	RF	\$18	\$96,250	30%	\$125,125
205+00	- 242+50			Landscaping Allowance - Guideway	LS10	3,750	RF	\$18	\$65,625	30%	\$85,313
205+00	- 242+50	*		Landscaping Allowance - Guideway	LS10	3,750	RF	\$18	\$65,625	30%	\$85,313
				Total Landscaping		9,250	RF		\$227,500		\$295,750
TOTAL						9,250	RF		\$5,487		\$50,755,463

BAY LINK
MIAMI - MIAMI BEACH TRANSPORTATION CORRIDOR
Segment A-2
Sta. 126+00 to Sta. 242+50

TECHNOLOGY ALTERNATIVE: LRT

STATIONING			DESCRIPTION	COST ID	QTY	UNIT	UNIT COST	BASE COST	DESIGN ALLOWANCE	TOTAL COST
BEGIN	END									
1.0 GUIDEWAY ELEMENTS										
1.1 GUIDEWAY										
126+00	-	242+50	At-Grade Street Running Sngl Track - Curb Side Lanes	AG31	11,650	RF	\$548	\$6,388,278	25%	\$7,985,347
Total Guideway					11,650	RF		\$6,388,278		\$7,985,347
1.2 TRACKWORK										
126+00	-	242+50	Paved - Single Track	TK10	11,650	RF	\$335	\$3,905,313	15%	\$4,491,110
Total Trackwork					11,650	RF		\$3,905,313		\$4,491,110
3.0 SYSTEM ELEMENTS										
3.1 TRAIN CONTROL										
126+00	-	242+50	Train Control - Single Track	TC01	11,650	RF	\$115	\$1,339,750	15%	\$1,540,713
Train Control, Station				TC10	9	EA	\$75,000	\$675,000	15%	\$776,250
Total Train Control					11,650	RF		\$2,014,750		\$2,316,963
3.2 TRACTION POWER										
126+00	-	242+50	Traction Power - Single Track	TP01	11,650	RF	\$226	\$2,632,900	15%	\$3,027,835
Total Traction Power					11,650	RF		\$2,632,900		\$3,027,835
3.3 COMMUNICATIONS										
126+00	-	242+50	Communication, Line - Single	CM01	11,650	RF	\$30	\$349,500	15%	\$401,925
Communication, Station				CM05	9	EA	\$200,000	\$1,800,000	15%	\$2,070,000
Total Communications					11,650	RF		\$2,149,500		\$2,471,925
3.4 FARE COLLECTION										
Fare Collection - Single Side Platform Station				FC03	9	EA	\$170,000	\$1,530,000	15%	\$1,759,500
Total Fare Collection					1	LS		\$1,530,000		\$1,759,500

Segment A-2

4.0 PASSENGER STATIONS									
Parkwest Sta.	At-Grade - Single Side Platform - Street Running	ST05	1	LS	\$673,970	\$673,970	15%	\$775,066	
9th St. Sta.	At-Grade - Single Side Platform - Street Running	ST05	1	LS	\$673,970	\$673,970	15%	\$775,066	
Overtown Sta.	At-Grade - Single Side Platform - Street Running	ST05	1	LS	\$673,970	\$673,970	15%	\$775,066	
Government Center Sta.	At-Grade - Single Side Platform - Street Running	ST05	1	LS	\$673,970	\$673,970	15%	\$775,066	
Miami Ave. Sta.	At-Grade - Single Side Platform - Street Running	ST05	1	LS	\$673,970	\$673,970	15%	\$775,066	
2nd Ave. Sta.	At-Grade - Single Side Platform - Street Running	ST05	1	LS	\$673,970	\$673,970	15%	\$775,066	
Bayfront Station	At-Grade - Single Side Platform - Street Running	ST05	1	LS	\$673,970	\$673,970	15%	\$775,066	
Bayside Station	At-Grade - Single Side Platform - Street Running	ST05	1	LS	\$673,970	\$673,970	15%	\$775,066	
AA Arena Sta.	At-Grade - Single Side Platform - Street Running	ST05	1	LS	\$673,970	\$673,970	15%	\$775,066	
Total Passenger Stations			1	LS		\$6,065,730		\$6,975,590	
6.0 SPECIAL CONDITIONS									
6.1 UTILITY MODIFICATIONS									
126+00 - 242+50	Utility Modifications Allowance - Light Urban	UM02	11,650	RF	\$350	\$4,077,500	30%	\$5,300,750	
Total Special Conditions			11,650	RF		\$4,077,500		\$5,300,750	
6.2 DEMOLITIONS									
	None								
Total Demolitions						\$0		\$0	
6.3 ROADWAY MODIFICATIONS									
	Roadway Modifications Allowance - Existing Signal	RM20	17	EA	\$80,000	\$1,360,000	30%	\$1,768,000	
	Roadway Modifications Allowance - New Signal	RM21	9	EA	\$120,000	\$1,080,000	30%	\$1,404,000	
Total Roadway Modifications						\$2,440,000		\$3,172,000	
6.4 ENVIRONMENTAL MITIGATION									
126+00 - 242+50	Environmental Mitigation Allowance - Heavy	EM03	11,650	RF	\$80	\$932,000	30%	\$1,211,600	
Total Environmental Mitigation			11,650	RF		\$932,000		\$1,211,600	
6.5 LANDSCAPING									
126+00 - 242+50	Landscaping Allowance - Guideway	LS10	11,650	RF	\$18	\$203,875	30%	\$265,038	
Total Landscaping			11,650	RF		\$203,875		\$265,038	
TOTAL			11,650	RF		\$3,346		\$38,977,656	

BAY LINK
MIAMI - MIAMI BEACH TRANSPORTATION CORRIDOR
Segment A-3
Sta. 141+50 to Sta. 242+50

TECHNOLOGY ALTERNATIVE: LRT

STATIONING			DESCRIPTION	COST ID	QTY	UNIT	UNIT COST	BASE COST	DESIGN ALLOWANCE	TOTAL COST
BEGIN	END									
1.0 GUIDEWAY ELEMENTS										
1.1 GUIDEWAY										
141+60	-	242+50	At-Grade Street Running Sngl Track - Curb Side Lanes	AG31	10,090	RF	\$548	\$5,532,852	25%	\$6,916,064
Total Guideway					10,090	RF		\$5,532,852		\$6,916,064
1.2 TRACKWORK										
141+60	-	242+50	Paved - Single Track	TK10	10,090	RF	\$335	\$3,382,370	15%	\$3,889,725
Total Trackwork					10,090	RF		\$3,382,370		\$3,889,725
3.0 SYSTEM ELEMENTS										
3.1 TRAIN CONTROL										
141+60	-	242+50	Train Control - Single Track	TC01	10,090	RF	\$115	\$1,160,350	15%	\$1,334,403
Train Control, Station				TC10	8	EA	\$75,000	\$600,000	15%	\$690,000
Total Train Control					10,090	RF		\$1,760,350		\$2,024,403
3.2 TRACTION POWER										
141+60	-	242+50	Traction Power - Single Track	TP01	10,090	RF	\$226	\$2,280,340	15%	\$2,622,391
Total Traction Power					10,090	RF		\$2,280,340		\$2,622,391
3.3 COMMUNICATIONS										
141+60	-	242+50	Communication, Line - Single	CM01	10,090	RF	\$30	\$302,700	15%	\$348,105
Communication, Station				CM05	8	EA	\$200,000	\$1,600,000	15%	\$1,840,000
Total Communications					10,090	RF		\$1,902,700		\$2,188,105
3.4 FARE COLLECTION										
Fare Collection - Single Side Platform Station				FC03	8	EA	\$170,000	\$1,360,000	15%	\$1,564,000
Total Fare Collection					1	LS		\$1,360,000		\$1,564,000
4.0 PASSENGER STATIONS										
AA Arena Sta. IB			At-Grade - Single Side Platform - Street Running	ST05	1	LS	\$673,970	\$673,970	15%	\$775,066
College Sta.			At-Grade - Single Side Platform - Street Running	ST05	1	LS	\$673,970	\$673,970	15%	\$775,066
Federal Center Sta.			At-Grade - Single Side Platform - Street Running	ST05	1	LS	\$673,970	\$673,970	15%	\$775,066
Government Center Sta.			At-Grade - Single Side Platform - Street Running	ST05	1	LS	\$673,970	\$673,970	15%	\$775,066
Miami Ave. Sta.			At-Grade - Single Side Platform - Street Running	ST05	1	LS	\$673,970	\$673,970	15%	\$775,066
2nd Ave. Sta.			At-Grade - Single Side Platform - Street Running	ST05	1	LS	\$673,970	\$673,970	15%	\$775,066

Segment A-3

Bayside Station	At-Grade - Single Side Platform - Street Running	ST05	1	LS	\$673,970	\$673,970	15%	\$775,066
AA Arena Sta. OB	At-Grade - Single Side Platform - Street Running	ST05	1	LS	\$673,970	\$673,970	15%	\$775,066
	Total Passenger Stations		1	LS		\$5,391,760		\$6,200,524
6.0 SPECIAL CONDITIONS								
6.1 UTILITY MODIFICATIONS								
141+50 - 242+50	Utility Modifications Allowance - Light Urban	UM02	10,100	RF	\$350	\$3,535,000	30%	\$4,595,500
	Total Special Conditions		10,100	RF		\$3,535,000		\$4,595,500
6.2 DEMOLITIONS								
	None							
	Total Demolitions					\$0		\$0
6.3 ROADWAY MODIFICATIONS								
	Roadway Modifications Allowance - Existing Signal	RM20	12	EA	\$80,000	\$960,000	30%	\$1,248,000
	Roadway Modifications Allowance - New Signal	RM21	6	EA	\$120,000	\$720,000	30%	\$936,000
	Total Roadway Modifications					\$1,680,000		\$2,184,000
6.4 ENVIRONMENTAL MITIGATION								
141+50 - 242+50	Environmental Mitigation Allowance - Heavy	EM03	10,100	RF	\$80	\$808,000	30%	\$1,050,400
	Total Environmental Mitigation		10,100	RF		\$808,000		\$1,050,400
6.5 LANDSCAPING								
141+50 - 242+50	Landscaping Allowance - Guideway	LS10	10,100	RF	\$18	\$176,750	30%	\$229,775
	Total Landscaping		10,100	RF		\$176,750		\$229,775
TOTAL			10,090	RF		\$3,317		\$33,464,887

BAY LINK
MIAMI - MIAMI BEACH TRANSPORTATION CORRIDOR
Segment A-4
Sta. 242+50 to Sta. 423+04

TECHNOLOGY ALTERNATIVE: LRT

STATIONING			DESCRIPTION	COST ID	QTY	UNIT	UNIT COST	BASE COST	DESIGN ALLOWANCE	TOTAL COST
BEGIN	END									
1.0 GUIDEWAY ELEMENTS										
1.1 GUIDEWAY										
242+50	-	257+00	At-Grade Ballasted Track - Adjacent to Street	AG02	1,450	RF	\$384	\$557,018	25%	\$696,272
257+00	-	261+00	Retained Fill - Two Sides (Avg. 20' Height)	RF22	400	RF	\$1,853	\$741,128	25%	\$926,410
261+00	-	287+00	Dbl. Precast Segmental Box Girder (River Crossing)	EL28	2,600	RF	\$3,890	\$10,112,960	25%	\$12,641,200
287+00	-	291+00	Retained Fill - Two Sides (Avg. 20' Height)	RF22	400	RF	\$1,853	\$741,128	25%	\$926,410
291+00	-	315+00	At-Grade Ballasted Track - Adjacent to Street	AG02	2,400	RF	\$384	\$921,960	25%	\$1,152,450
315+00	-	390+00	Retained Fill - One Side (Avg. 20' Height)	RF02	7,500	RF	\$948	\$7,110,375	25%	\$8,887,969
390+00	-	423+04	Dbl. Precast Segmental Box Girder (River Crossing)	EL28	3,304	RF	\$3,890	\$12,851,238	25%	\$16,064,048
Total Guideway					18,054	RF		\$33,035,807		\$41,294,759
1.2 TRACKWORK										
242+50	-	261+00	Ballasted - Double Track	TK02	1,850	RF	\$351	\$649,720	15%	\$747,178
261+00	-	287+00	Direct Fixation - Double Track	TK21	2,600	RF	\$400	\$1,040,000	15%	\$1,196,000
287+00	-	390+00	Ballasted - Double Track	TK02	10,300	RF	\$351	\$3,617,360	15%	\$4,159,964
390+00	-	423+04	Direct Fixation - Double Track	TK21	3,304	RF	\$400	\$1,321,600	15%	\$1,519,840
Total Trackwork					18,054	RF		\$7,528,680		\$8,657,982
3.0 SYSTEM ELEMENTS										
3.1 TRAIN CONTROL										
242+50	-	423+04	Train Control - Double Track	TC02	18,054	RF	\$230	\$4,152,420	15%	\$4,775,283
Total Train Control					18,054	RF		\$4,939,920		\$5,680,908
3.2 TRACTION POWER										
242+50	-	423+04	Traction Power - Double Track	TP02	18,054	RF	\$276	\$4,982,904	15%	\$5,730,340
Total Traction Power					18,054	RF		\$4,982,904		\$5,730,340
3.3 COMMUNICATIONS										
242+50	-	423+04	Communication, Line - Double	CM02	18,054	RF	\$60	\$1,083,240	15%	\$1,245,726
Total Communications					18,054	RF		\$1,883,240		\$2,165,726

Segment A-4

3.4 FARE COLLECTION								
	Fare Collection - Center Platform Station	FC01	4	EA	\$185,000	\$740,000	15%	\$851,000
	Total Fare Collection		1	LS		\$740,000		\$851,000
4.0 PASSENGER STATIONS								
Bicentennial Park Sta.	At-Grade - Center Platform	ST01	1	LS	\$879,600	\$879,600	15%	\$1,011,541
	Station Pedestrian Access Bridge	PA01	450	LF	\$3,875	\$1,743,750	15%	\$2,005,313
	Station Pedestrian Vertical Access - Elevated	PA20	3	EA	\$1,068,080	\$3,204,240	15%	\$3,684,876
Watson Island Sta.	At-Grade - Center Platform	ST01	1	LS	\$879,600	\$879,600	15%	\$1,011,541
Palm Island Sta.	At-Grade - Center Platform	ST01	1	LS	\$879,600	\$879,600	15%	\$1,011,541
Terminal Island Sta.	At-Grade - Center Platform	ST01	1	LS	\$879,600	\$879,600	15%	\$1,011,541
	Total Passenger Stations		1	LS		\$8,466,392		\$9,736,351
6.0 SPECIAL CONDITIONS								
6.1 UTILITY MODIFICATIONS								
242+50 - 261+00	Utility Modifications Allowance - Light Urban	UM02	1,850	RF	\$350	\$647,500	30%	\$841,750
261+00 - 287+00	Utility Modifications Allowance - Light	UM01	2,600	RF	\$100	\$260,000	30%	\$338,000
287+00 - 390+00	Utility Modifications Allowance - Light Urban	UM02	10,300	RF	\$350	\$3,605,000	30%	\$4,686,500
390+00 - 423+04	Utility Modifications Allowance - Light	UM01	3,304	RF	\$100	\$330,400	30%	\$429,520
	Total Special Conditions		18,054	RF		\$4,842,900		\$6,295,770
6.2 DEMOLITIONS								
	None							
	Total Demolitions					\$0		\$0
6.3 ROADWAY MODIFICATIONS								
	None							
	Total Roadway Modifications					\$0		\$0
6.4 ENVIRONMENTAL MITIGATION								
242+50 - 261+00	Environmental Mitigation Allowance - Moderate	EM02	1,850	RF	\$50	\$92,500	30%	\$120,250
261+00 - 287+00	Environmental Mitigation Allowance - Light	EM01	2,600	RF	\$20	\$52,000	30%	\$67,600
287+00 - 390+00	Environmental Mitigation Allowance - Moderate	EM02	10,300	RF	\$50	\$515,000	30%	\$669,500
390+00 - 423+04	Environmental Mitigation Allowance - Light	EM01	3,304	RF	\$20	\$66,080	30%	\$85,904
	Total Environmental Mitigation		18,054	RF		\$725,580		\$943,254
6.5 LANDSCAPING								
242+50 - 261+00	Landscaping Allowance - Guideway	LS10	1,850	RF	\$18	\$32,375	30%	\$42,088
287+00 - 390+00	Landscaping Allowance - Guideway	LS10	10,300	RF	\$18	\$180,250	30%	\$234,325
	Total Landscaping		12,150	RF		\$212,625		\$276,413
TOTAL			18,054	RF		\$4,522		\$81,632,501

BAY LINK
MIAMI - MIAMI BEACH TRANSPORTATION CORRIDOR
Segment B-1
Sta. 500+00 to Sta. 606+00

TECHNOLOGY ALTERNATIVE: LRT

STATIONING			DESCRIPTION	COST ID	QTY	UNIT	UNIT COST	BASE COST	DESIGN ALLOWANCE	TOTAL COST	
BEGIN	END										
1.0 GUIDEWAY ELEMENTS											
1.1 GUIDEWAY											
500+00	-	504+00	Dbl. Precast Segmental Box Girder (River Crossing)	EL28	400	RF	\$3,890	\$1,555,840	25%	\$1,944,800	
504+00	-	507+00	Retained Fill - Two Sides (Avg. 20' Height)	RF22	300	RF	\$1,853	\$555,846	25%	\$694,808	
507+00	-	530+00	At-Grade Street Running Track - Curb Side Lanes	AG41	2,300	RF	\$940	\$2,161,908	25%	\$2,702,385	
530+00	-	606+00	At-Grade Street Running Track in Median	AG40	7,600	RF	\$852	\$6,475,656	25%	\$8,094,570	
Total Guideway					10,600	RF		\$10,749,250		\$13,436,563	
1.2 TRACKWORK											
500+00	-	504+00	Direct Fixation - Double Track	TK21	400	RF	\$400	\$160,000	15%	\$184,000	
504+00	-	507+00	Ballasted - Double Track	TK02	300	RF	\$351	\$105,360	15%	\$121,164	
507+00	-	606+00	Paved - Double Track	TK11	9,900	RF	\$670	\$6,637,554	15%	\$7,633,187	
Direct Fixation - Double Cross-over					SP18	2	EA	\$380,000	\$760,000	15%	\$874,000
Total Trackwork					10,600	RF		\$7,662,914		\$8,812,351	
3.0 SYSTEM ELEMENTS											
3.1 TRAIN CONTROL											
500+00	-	606+00	Train Control - Double Track	TC02	10,600	RF	\$230	\$2,438,000	15%	\$2,803,700	
Train Control, Station					TC10	6	EA	\$75,000	\$450,000	15%	\$517,500
Train Control, Double Crossover					TC15	2	EA	\$162,500	\$325,000	15%	\$373,750
Total Train Control					10,600	RF		\$3,213,000		\$3,694,950	
3.2 TRACTION POWER											
500+00	-	606+00	Traction Power - Double Track	TP02	10,600	RF	\$276	\$2,925,600	15%	\$3,364,440	
Total Traction Power					10,600	RF		\$2,925,600		\$3,364,440	
3.3 COMMUNICATIONS											
500+00	-	606+00	Communication, Line - Double	CM02	10,600	RF	\$60	\$636,000	15%	\$731,400	
Communication, Station					CM05	6	EA	\$200,000	\$1,200,000	15%	\$1,380,000
Total Communications					10,600	RF		\$1,836,000		\$2,111,400	
3.4 FARE COLLECTION											
Fare Collection - Side Platform Station					FC02	3	EA	\$340,000	\$1,020,000	15%	\$1,173,000
Total Fare Collection						1	LS		\$1,020,000		\$1,173,000

Segment B-1

4.0 PASSENGER STATIONS									
5th St. Sta.	At-Grade - Side Platform - Street Running in Median	ST04	1	LS	\$1,236,623	\$1,236,623	15%	\$1,422,116	
6th St. Sta.	At-Grade - Side Platform - Street Running in Median	ST04	1	LS	\$1,236,623	\$1,236,623	15%	\$1,422,116	
10th St. Sta.	At-Grade - Side Platform - Street Running in Median	ST04	1	LS	\$1,236,623	\$1,236,623	15%	\$1,422,116	
14th St. Sta.	At-Grade - Side Platform - Street Running in Median	ST04	1	LS	\$1,236,623	\$1,236,623	15%	\$1,422,116	
Lincoln Rd. Sta.	At-Grade - Side Platform - Street Running in Median	ST04	1	LS	\$1,236,623	\$1,236,623	15%	\$1,422,116	
Convention Center Sta.	At-Grade - Center Platform	ST01	1	LS	\$879,600	\$879,600	15%	\$1,011,541	
Total Passenger Stations			1	LS		\$7,062,713		\$8,122,120	
6.0 SPECIAL CONDITIONS									
6.1 UTILITY MODIFICATIONS									
500+00 - 606+00	Utility Modifications Allowance - Light Urban	UM02	10,600	RF	\$350	\$3,710,000	30%	\$4,823,000	
Total Special Conditions			10,600	RF		\$3,710,000		\$4,823,000	
6.2 DEMOLITIONS									
None									
Total Demolitions							\$0	\$0	
6.3 ROADWAY MODIFICATIONS									
Roadway Modifications Allowance - Adding 1 Lane		RM10	9,000	LnF	\$215	\$1,930,770	30%	\$2,510,001	
Roadway Modifications Allowance - Existing Signal		RM20	20	EA	\$80,000	\$1,600,000	30%	\$2,080,000	
Roadway Modifications Allowance - New Signal		RM21	1	EA	\$120,000	\$120,000	30%	\$156,000	
Total Roadway Modifications							\$3,650,770	\$4,746,001	
6.4 ENVIRONMENTAL MITIGATION									
500+00 - 606+00	Environmental Mitigation Allowance - Heavy	EM03	10,600	RF	\$80	\$848,000	30%	\$1,102,400	
Total Environmental Mitigation			10,600	RF		\$848,000		\$1,102,400	
6.5 LANDSCAPING									
500+00 - 606+00	Landscaping Allowance - Guideway	LS10	10,600	RF	\$18	\$185,500	30%	\$241,150	
Total Landscaping			10,600	RF		\$185,500		\$241,150	
TOTAL			10,600	RF		\$4,871		\$51,627,375	

BAY LINK
MIAMI - MIAMI BEACH TRANSPORTATION CORRIDOR
Segment B-2
Sta. 477+64 to Sta. 606+00
Sta. 800+00 to Sta. 897+00

TECHNOLOGY ALTERNATIVE: LRT

STATIONING		DESCRIPTION	COST ID	QTY	UNIT	UNIT COST	BASE COST	DESIGN ALLOWANCE	TOTAL COST
BEGIN	END								
1.0 GUIDEWAY ELEMENTS									
1.1 GUIDEWAY									
477+64	- 481+64	Dbl. Precast Segmental Box Girder (River Crossing)	EL28	400	RF	\$3,890	\$1,555,840	25%	\$1,944,800
481+64	- 484+64	Retained Fill - Two Sides (Avg. 20' Height)	RF22	300	RF	\$1,853	\$555,846	25%	\$694,808
484+64	- 513+00	At-Grade Street Running Track - Curb Side Lanes	AG41	2,836	RF	\$940	\$2,665,727	25%	\$3,332,158
513+00	- 606+00	At-Grade Street Running Track in Median	AG40	9,300	RF	\$852	\$7,924,158	25%	\$9,905,198
800+00	- 897+00	At-Grade Street Running Sngl Track - Curb Side Lanes	AG31	9,700	RF	\$548	\$5,318,995	25%	\$6,648,744
Total Guideway				22,536	RF		\$18,020,566		\$22,525,707
1.2 TRACKWORK									
477+64	- 481+64	Direct Fixation - Double Track	TK21	400	RF	\$400	\$160,000	15%	\$184,000
481+64	- 484+64	Ballasted - Double Track	TK02	300	RF	\$351	\$105,360	15%	\$121,164
484+64	- 606+00	Paved - Double Track	TK11	12,136	RF	\$670	\$8,136,703	15%	\$9,357,208
800+00	- 897+00	Paved - Single Track	TK10	9,700	RF	\$335	\$3,251,634	15%	\$3,739,379
		Direct Fixation - Double Cross-over	SP18	2	EA	\$380,000	\$760,000	15%	\$874,000
		Direct Fixation - Turnout	SP28	2	EA	\$95,000	\$190,000	15%	\$218,500
Total Trackwork				22,536	RF		\$12,603,697		\$14,494,251
3.0 SYSTEM ELEMENTS									
3.1 TRAIN CONTROL									
477+64	- 606+00	Train Control - Double Track	TC02	12,836	RF	\$230	\$2,952,280	15%	\$3,395,122
800+00	- 897+00	Train Control - Single Track	TC01	9,700	RF	\$115	\$1,115,500	15%	\$1,282,825
		Train Control, Station	TC10	12	EA	\$75,000	\$900,000	15%	\$1,035,000
		Train Control, Double Crossover	TC15	2	EA	\$162,500	\$325,000	15%	\$373,750
		Train Control, Turnout	TC25	2	EA	\$100,000	\$200,000	15%	\$230,000
Total Train Control				22,536	RF		\$5,492,780		\$6,316,697
3.2 TRACTION POWER									
477+64	- 606+00	Traction Power - Double Track	TP02	12,836	RF	\$276	\$3,542,736	15%	\$4,074,146
800+00	- 897+00	Traction Power - Single Track	TP01	9,700	RF	\$226	\$2,192,200	15%	\$2,521,030
Total Traction Power				22,536	RF		\$5,734,936		\$6,595,176
3.3 COMMUNICATIONS									
477+64	- 606+00	Communication, Line - Double	CM02	12,836	RF	\$60	\$770,160	15%	\$885,684
800+00	- 897+00	Communication, Line - Single	CM01	9,700	RF	\$30	\$291,000	15%	\$334,650
		Communication, Station	CM05	12	EA	\$200,000	\$2,400,000	15%	\$2,760,000
Total Communications				22,536	RF		\$3,461,160		\$3,980,334

Segment B-2

3.4 FARE COLLECTION								
	Fare Collection - Center Platform Station	FC01	1	EA	\$185,000	\$185,000	15%	\$212,750
	Fare Collection - Side Platform Station	FC02	6	EA	\$340,000	\$2,040,000	15%	\$2,346,000
	Fare Collection - Single Side Platform Station	FC03	5	EA	\$170,000	\$850,000	15%	\$977,500
	Total Fare Collection		1	LS		\$3,075,000		\$3,536,250
4.0 PASSENGER STATIONS								
5th St. Sta.	At-Grade - Side Platform - Street Running in Median	ST04	1	LS	\$1,236,623	\$1,236,623	15%	\$1,422,116
1st St. Sta.	At-Grade - Side Platform - Street Running in Median	ST04	1	LS	\$1,236,623	\$1,236,623	15%	\$1,422,116
6th St. Sta.	At-Grade - Side Platform - Street Running in Median	ST04	1	LS	\$1,236,623	\$1,236,623	15%	\$1,422,116
10th St. Sta.	At-Grade - Side Platform - Street Running in Median	ST04	1	LS	\$1,236,623	\$1,236,623	15%	\$1,422,116
14th St. Sta.	At-Grade - Side Platform - Street Running in Median	ST04	1	LS	\$1,236,623	\$1,236,623	15%	\$1,422,116
Lincoln Rd. Sta.	At-Grade - Side Platform - Street Running in Median	ST04	1	LS	\$1,236,623	\$1,236,623	15%	\$1,422,116
Convention Center Sta.	At-Grade - Center Platform	ST01	1	LS	\$879,600	\$879,600	15%	\$1,011,541
11th St. Sta.	At-Grade - Single Side Platform - Street Running	ST05	1	LS	\$673,970	\$673,970	15%	\$775,066
15th St. Sta.	At-Grade - Single Side Platform - Street Running	ST05	1	LS	\$673,970	\$673,970	15%	\$775,066
17th St. Sta.	At-Grade - Single Side Platform - Street Running	ST05	1	LS	\$673,970	\$673,970	15%	\$775,066
Meridian Sta.	At-Grade - Single Side Platform - Street Running	ST05	1	LS	\$673,970	\$673,970	15%	\$775,066
Performing Arts Sta.	At-Grade - Single Side Platform - Street Running	ST05	1	LS	\$673,970	\$673,970	15%	\$775,066
	Total Passenger Stations		1	LS		\$11,669,186		\$13,419,564
6.0 SPECIAL CONDITIONS								
6.1 UTILITY MODIFICATIONS								
477+64 - 606+00	Utility Modifications Allowance - Light Urban	UM02	12,836	RF	\$350	\$4,492,600	30%	\$5,840,380
800+00 - 897+00	Utility Modifications Allowance - Light Urban	UM02	9,700	RF	\$350	\$3,395,000	30%	\$4,413,500
	Total Special Conditions		22,536	RF		\$7,887,600		\$10,253,880
6.2 DEMOLITIONS								
	None							
	Total Demolitions					\$0		\$0
6.3 ROADWAY MODIFICATIONS								
	Roadway Modifications Allowance - Adding 1 Lane	RM10	9,000	LnF	\$215	\$1,930,770	30%	\$2,510,001
	Roadway Modifications Allowance - Existing Signal	RM20	29	EA	\$80,000	\$2,320,000	30%	\$3,016,000
	Roadway Modifications Allowance - New Signal	RM21	15	EA	\$120,000	\$1,800,000	30%	\$2,340,000
	Total Roadway Modifications					\$6,050,770		\$7,866,001
6.4 ENVIRONMENTAL MITIGATION								
477+64 - 606+00	Environmental Mitigation Allowance - Heavy	EM03	12,836	RF	\$80	\$1,026,880	30%	\$1,334,944
800+00 - 897+00	Environmental Mitigation Allowance - Heavy	EM03	9,700	RF	\$80	\$776,000	30%	\$1,008,800
	Total Environmental Mitigation		22,536	RF		\$1,802,880		\$2,343,744

Segment B-2

6.5 LANDSCAPING											
	477+64	-	606+00	Landscaping Allowance - Guideway	LS10	12,836	RF	\$18	\$224,630	30%	\$292,019
	800+00	-	897+00	Landscaping Allowance - Guideway	LS10	9,700	RF	\$18	\$169,750	30%	\$220,675
				Total Landscaping		22,536	RF		\$394,380		\$512,694
TOTAL						22,536	RF		\$4,075		\$91,844,298

BAY LINK
MIAMI - MIAMI BEACH TRANSPORTATION CORRIDOR
Segment B-3
Sta. 100+00 to Sta. 234+00

TECHNOLOGY ALTERNATIVE: LRT

STATIONING			DESCRIPTION	COST ID	QTY	UNIT	UNIT COST	BASE COST	DESIGN ALLOWANCE	TOTAL COST	
BEGIN	END										
1.0 GUIDEWAY ELEMENTS											
1.1 GUIDEWAY											
900+00	-	904+00	Retained Fill - Two Sides (Avg. 20' Height)	RF22	400	RF	\$1,853	\$741,128	25%	\$926,410	
904+00	-	907+00	Dbl. Precast Segmental Box Girder (River Crossing)	EL28	300	RF	\$3,890	\$1,166,880	25%	\$1,458,600	
907+00	-	921+50	At-Grade Street Running Track - Curb Side Lanes	AG41	1,450	RF	\$940	\$1,362,942	25%	\$1,703,678	
921+50	-	970+00	At-Grade Street Running Track in Median	AG40	4,850	RF	\$852	\$4,132,491	25%	\$5,165,614	
970+00	-	1002+00	At-Grade Street Running Sngl Track - Curb Side Lanes	AG31	3,200	RF	\$548	\$1,754,720	25%	\$2,193,400	
1002+00	-	1014+00	At-Grade Street Running Track in Median	AG40	1,200	RF	\$852	\$1,022,472	25%	\$1,278,090	
Total Guideway					11,400	RF		\$10,180,633		\$12,725,791	
1.2 TRACKWORK											
900+00	-	904+00	Direct Fixation - Double Track	TK21	400	RF	\$400	\$160,000	15%	\$184,000	
904+00	-	907+00	Ballasted - Double Track	TK02	300	RF	\$351	\$105,360	15%	\$121,164	
907+00	-	1014+00	Paved - Double Track	TK11	10,700	RF	\$670	\$7,173,922	15%	\$8,250,010	
Direct Fixation - Double Cross-over					SP18	2	EA	\$380,000	\$760,000	15%	\$874,000
Total Trackwork					11,400	RF		\$8,199,282		\$9,429,174	
3.0 SYSTEM ELEMENTS											
3.1 TRAIN CONTROL											
900+00	-	1014+00	Train Control - Double Track	TC02	11,400	RF	\$230	\$2,622,000	15%	\$3,015,300	
Train Control, Station				TC10	8	EA	\$75,000	\$600,000	15%	\$690,000	
Train Control, Double Crossover				TC15	2	EA	\$162,500	\$325,000	15%	\$373,750	
Total Train Control					11,400	RF		\$3,547,000		\$4,079,050	
3.2 TRACTION POWER											
900+00	-	1014+00	Traction Power - Double Track	TP02	11,400	RF	\$276	\$3,146,400	15%	\$3,618,360	
Total Traction Power					11,400	RF		\$3,146,400		\$3,618,360	
3.3 COMMUNICATIONS											
900+00	-	1014+00	Communication, Line - Double	CM02	11,400	RF	\$60	\$684,000	15%	\$786,600	
Communication, Station				CM05	8	EA	\$200,000	\$1,600,000	15%	\$1,840,000	
Total Communications					11,400	RF		\$2,284,000		\$2,626,600	
3.4 FARE COLLECTION											
Fare Collection - Center Platform Station				FC01	1	EA	\$185,000	\$185,000	15%	\$212,750	
Fare Collection - Side Platform Station				FC02	7	EA	\$340,000	\$2,380,000	15%	\$2,737,000	
Total Fare Collection					1	LS		\$2,565,000		\$2,949,750	

Segment B-3

4.0 PASSENGER STATIONS									
5th St. Sta.	At-Grade - Side Platform - Street Running in Median	ST04	1	LS	\$1,236,623	\$1,236,623	15%	\$1,422,116	
9th St. Sta.	At-Grade - Side Platform - Street Running in Median	ST04	1	LS	\$1,236,623	\$1,236,623	15%	\$1,422,116	
12th St. Sta.	At-Grade - Side Platform - Street Running in Median	ST04	1	LS	\$1,236,623	\$1,236,623	15%	\$1,422,116	
16th St. Sta.	At-Grade - Side Platform - Street Running in Median	ST04	1	LS	\$1,236,623	\$1,236,623	15%	\$1,422,116	
17th St. Sta.	At-Grade - Side Platform - Street Running in Median	ST04	1	LS	\$1,236,623	\$1,236,623	15%	\$1,422,116	
Meridian Sta.	At-Grade - Side Platform - Street Running in Median	ST04	1	LS	\$1,236,623	\$1,236,623	15%	\$1,422,116	
Performing Arts Sta.	At-Grade - Side Platform - Street Running in Median	ST04	1	LS	\$1,236,623	\$1,236,623	15%	\$1,422,116	
Convention Center Sta.	At-Grade - Center Platform	ST01	1	LS	\$879,600	\$879,600	15%	\$1,011,541	
Total Passenger Stations			1	LS		\$9,535,959		\$10,966,352	
6.0 SPECIAL CONDITIONS									
6.1 UTILITY MODIFICATIONS									
900+00 - 1014+00	Utility Modifications Allowance - Light Urban	UM02	11,400	RF	\$350	\$3,990,000	30%	\$5,187,000	
Total Special Conditions			11,400	RF		\$3,990,000		\$5,187,000	
6.2 DEMOLITIONS									
None									
Total Demolitions							\$0	\$0	
6.3 ROADWAY MODIFICATIONS									
	Roadway Modifications Allowance - Adding 1 Lane	RM10	9,000	LnF	\$215	\$1,930,770	30%	\$2,510,001	
	Roadway Modifications Allowance - Existing Signal	RM20	15	EA	\$80,000	\$1,200,000	30%	\$1,560,000	
	Roadway Modifications Allowance - New Signal	RM21	10	EA	\$120,000	\$1,200,000	30%	\$1,560,000	
Total Roadway Modifications							\$4,330,770	\$5,630,001	
6.4 ENVIRONMENTAL MITIGATION									
900+00 - 1014+00	Environmental Mitigation Allowance - Heavy	EM03	11,400	RF	\$80	\$912,000	30%	\$1,185,600	
Total Environmental Mitigation			11,400	RF		\$912,000		\$1,185,600	
6.5 LANDSCAPING									
900+00 - 1014+00	Landscaping Allowance - Guideway	LS10	11,400	RF	\$18	\$199,500	30%	\$259,350	
Total Landscaping			11,400	RF		\$199,500		\$259,350	
TOTAL			11,400	RF		\$5,145		\$58,657,029	

BAY LINK
MIAMI - MIAMI BEACH TRANSPORTATION CORRIDOR
Systemwide

TECHNOLOGY ALTERNATIVE: LRT

STATIONING		DESCRIPTION	COST		UNIT	UNIT COST	BASE COST	DESIGN ALLOWANCE	TOTAL COST
BEGIN	END		ID	QTY					
2.0 YARD AND SHOPS									
2.1 Maintenance Facility		Allowance for Y&S, per Vehicle		18	EA		\$18,000,000	15%	\$20,700,000
Yard Lead		At-Grade Ballasted Track - Railroad Corridor	AG11	2,640	RF	\$203	\$536,474	25%	\$670,593
		Ballasted - Single Track	TK01	2,640	RF	\$182	\$480,480	25%	\$600,600
		Total Yard and Shops		1	LS		\$19,016,954		\$21,971,193
5.0 VEHICLES (Options with Seg. A-1)									
5.1 LRT Vehicles		LRT Vehicles, Low Floor Cars		18	EA	#	\$39,600,000	5%	\$41,580,000
5.2 Bus Vehicles		Bus Vehicles		0	EA	\$375,000	\$0	5%	\$0
		Total Vehicles		18	EA		\$39,600,000		\$41,580,000
5.0 VEHICLES (Options for all other Seg.)									
5.1 LRT Vehicles		LRT Vehicles, Low Floor Cars		16	EA		\$35,200,000	5%	\$36,960,000
5.2 Bus Vehicles		Bus Vehicles		0	EA	\$375,000	\$0	5%	\$0
		Total Vehicles		16	EA		\$35,200,000		\$36,960,000

BAY LINK
MIAMI - MIAMI BEACH TRANSPORTATION CORRIDOR
Right-of-Way

TECHNOLOGY ALTERNATIVE: LRT

STATIONING			COST ID	QTY	UNIT	UNIT COST	BASE COST	DESIGN ALLOWANCE	TOTAL COST
BEGIN	END	DESCRIPTION							
7.0 RIGHT-OF-WAY									
7.1	Segment A-1	Right-of-Way		0	SF	\$15	\$0	30%	\$0
		Total Segment 1					\$0		\$0
7.2	Segment A-2	Right-of-Way		0	SF	\$15	\$0	30%	\$0
		Total Segment 2					\$0		\$0
7.3	Segment A-3	Right-of-Way		0	SF	\$15	\$0	30%	\$0
		Total Segment 3					\$0		\$0
7.4	Segment A-4	Right-of-Way		0	SF	\$25	\$0	30%	\$0
		Total Segment 4					\$0		\$0
7.5	Segment B-1	Right-of-Way		0	SF	\$15	\$0	30%	\$0
		Total Segment 5					\$0		\$0
7.6	Segment B-2	Right-of-Way		0	SF	\$15	\$0	30%	\$0
		Total Segment 6					\$0		\$0
7.7	Segment B-3	Right-of-Way		0	SF	\$15	\$0	30%	\$0
		Total Segment 7					\$0		\$0
7.11	Yard and Shop	Right-of-Way		871,200	SF	\$5	\$4,356,000	30%	\$5,662,800
		Total Yard & Shop					\$4,356,000		\$5,662,800
				20.0	AC				
TOTAL				0	SF				\$0

BAY LINK
MIAMI - MIAMI BEACH TRANSPORTATION CORRIDOR
Bus Rapid Transit - Downtown Miami to Miami Beach Via Macauther Casuway
Capital Cost Estimate
(2001 Dollars in Millions)

Description	Segment A-1	Segment A-4	Segment B-1	Maintenance Facility	Vehicles	Total Alternative
Length (RF):	9,700	18,300	9,800			37,800
Number of Stations:	9	5	6			20
Number of Vehicles:					21	21
1.0 Guideway Elements						
1.1 Guideway	\$3.1	\$30.3	\$5.3			\$38.8
1.2 Trackwork	\$0.0	\$0.0	\$0.0			\$0.0
2.0 Yards & Shops						
2.0 Yard & Shop				\$3.7		\$3.7
3.0 System Elements						
3.1 Train Control	\$0.0	\$0.0	\$0.0			\$0.0
3.2 Traction Power	\$0.0	\$0.0	\$0.0			\$0.0
3.3 Communications	\$0.4	\$0.7	\$0.4			\$1.5
3.4 Fare Collection	\$0.0	\$0.0	\$0.0			\$0.0
4.0 Passenger Stations						
4.0 Passenger Stations	\$3.2	\$2.3	\$3.5			\$9.0
5.0 Vehicles						
5.0 Revenue Vehicles					\$8.5	\$8.5
6.0 Special Conditions						
6.1 Utility Modifications	\$0.6	\$1.2	\$0.6			\$2.5
6.2 Demolitions	\$0.0	\$0.0	\$0.0			\$0.0
6.3 Roadway Modifications	\$3.6	\$0.0	\$2.2			\$5.8
6.4 Environmental Mitigation	\$0.3	\$0.5	\$0.3			\$1.0
6.5 Landscaping	\$0.2	\$0.4	\$0.2			\$0.9
Subtotal Construction Costs	\$11.4	\$35.5	\$12.6	\$3.7	\$8.5	\$71.7
7.0 Right-of-Way						
7.0 Right-of-Way	\$0.0	\$0.0	\$0.0	\$4.2		\$4.2
8.0 Soft Costs (Calculated on Construction Cost Only)						
8.1 Preliminary Engineering 4.0%	\$0.5	\$1.4	\$0.5	\$0.1	\$0.3	\$2.9
8.2 Engineering Design 6.0%	\$0.7	\$2.1	\$0.8	\$0.2	\$0.5	\$4.3
8.3 Construction Management 8.0%	\$0.9	\$2.8	\$1.0	\$0.3	\$0.7	\$5.7
8.4 Project Management, Agency/PMC 4.0%	\$0.5	\$1.4	\$0.5	\$0.1	\$0.3	\$2.9
8.5 Change Order Contingency 7.0%	\$0.8	\$2.5	\$0.9	\$0.3	\$0.6	\$5.0
8.6 Project Insurance 5.0%	\$0.6	\$1.8	\$0.6	\$0.2	\$0.4	\$3.6
8.7 Training/Start-Up/Testing 1.0%	\$0.1	\$0.4	\$0.1	\$0.0	\$0.1	\$0.7
Subtotal Soft Costs	LS \$4.0	\$12.4	\$4.4	\$1.3	\$3.0	\$25.1
Grand Total (\$2001)	\$15.4	\$47.9	\$17.0	\$9.2	\$11.4	\$100.9

<div>LEVEL 4</div> <div>BAY LINK</div> <div>MIAMI - MIAMI BEACH TRANSPORTATION CORRIDOR</div> <div>Segment A-1</div> <div>TECHNOLOGY ALTERNATIVE: BRT</div> <div>Sta. 1000+00 to Sta. 1097+00</div>									
STATIONING BEGIN	END	DESCRIPTION	COST ID	QTY	UNIT	UNIT COST	BASE COST	DESIGN ALLOWANCE	TOTAL COST
1.0 GUIDEWAY ELEMENTS									
1.1 GUIDEWAY									
1000+00	- 1070+00	Dedicated Busway - Single Lane	BRT1C.10C	7,000	RF	\$233	\$1,632,969	25%	\$2,041,211
1070+00	- 1097+00	Dedicated Busway - Arterial Curb Lanes	BRT6C.10C	2,700	RF	\$328	\$886,471	25%	\$1,108,088
		Total Guideway		9,700	RF		\$2,519,440		\$3,149,299
1.2 TRACKWORK									
		Does Not Apply							
		Total Trackwork					\$0		\$0
3.0 SYSTEM ELEMENTS									
3.1 TRAIN CONTROL									
		Does Not Apply							
		Total Train Control					\$0		\$0
3.2 TRACTION POWER									
		Does Not Apply							
		Total Traction Power					\$0		\$0
3.3 COMMUNICATIONS									
1000+00	- 1097+00	Communication, Line		9,700	RF	\$35	\$339,500	15%	\$390,425
		Total Communications		9,700	RF		\$339,500		\$390,425
3.4 FARE COLLECTION									
		All fare collection assumed on bus							
		Total Fare Collection					\$0		\$0
4.0 PASSENGER STATIONS									
		NE 1st St./Biscayne Blvd. Arterial Bus Lane Platform	BRT30.100	1	LS	\$252,903	\$252,903	15%	\$290,838
		NE 1st St./2nd Ave. Sta. Arterial Bus Lane Platform	BRT30.100	1	LS	\$252,903	\$252,903	15%	\$290,838
		NE 1st St./Miami Ave. Sta Arterial Bus Lane Platform	BRT30.100	1	LS	\$252,903	\$252,903	15%	\$290,838
		Government Center Sta. Arterial Bus Lane Platform	BRT30.100	1	LS	\$252,903	\$252,903	15%	\$290,838
		SE 1st St./Miami Ave. Sta Arterial Bus Lane Platform	BRT30.100	1	LS	\$252,903	\$252,903	15%	\$290,838
		SE 1st St./2nd Ave. Sta. Arterial Bus Lane Platform	BRT30.100	1	LS	\$252,903	\$252,903	15%	\$290,838
		Bayfront Station Arterial Bus Lane Platform	BRT30.100	1	LS	\$252,903	\$252,903	15%	\$290,838
		Bayside Station Arterial Bus Lane Station	BRT30.110	1	LS	\$505,805	\$505,805	15%	\$581,676
		AA Arena Sta. Arterial Bus Lane Station	BRT30.110	1	LS	\$505,805	\$505,805	15%	\$581,676
		Total Passenger Stations		1	LS		\$2,781,928		\$3,199,217
6.0 SPECIAL CONDITIONS									
6.1 UTILITY MODIFICATIONS									
1000+00	- 1097+00	Utility Modifications Allowance - Light Urban		9,700	RF	\$50	\$485,000	30%	\$630,500
		Total Special Conditions		9,700	RF		\$485,000		\$630,500
6.2 DEMOLITIONS									
		None							
		Total Demolitions					\$0		\$0
6.3 ROADWAY MODIFICATIONS									
		Roadway Modifications Allowance - Existing Signal	RM20	21	EA	\$80,000	\$1,680,000	30%	\$2,184,000
		Roadway Modifications Allowance - New Signal	RM21	9	EA	\$120,000	\$1,080,000	30%	\$1,404,000
		Total Roadway Modifications					\$2,760,000		\$3,588,000
6.4 ENVIRONMENTAL MITIGATION									
1000+00	- 1097+00	Environmental Mitigation Allowance - Light		9,700	RF	\$20	\$194,000	30%	\$252,200
		Total Environmental Mitigation		9,700	RF		\$194,000		\$252,200
6.5 LANDSCAPING									
1000+00	- 1097+00	Landscaping Allowance - Guideway	LS10	9,700	RF	\$18	\$169,750	30%	\$220,675
		Total Landscaping		9,700	RF		\$169,750		\$220,675
TOTAL				9,700	RF		\$1,178		\$11,430,316

LEVEL 4									
BAY LINK									
MIAMI - MIAMI BEACH TRANSPORTATION CORRIDOR									
Segment A-4									
Sta. 1097+00 to Sta. 1280+00									
TECHNOLOGY ALTERNATIVE: BRT									
STATIONING		DESCRIPTION	COST ID	QTY	UNIT	UNIT COST	BASE COST	DESIGN ALLOWANCE	TOTAL COST
BEGIN	END								
1.0 GUIDEWAY ELEMENTS									
1.1 GUIDEWAY									
1097+00	- 1165+00	Mixed Flow Busway - Dbl Curb Lane	BRT1.152	6,800	RF	\$46	\$312,188	25%	\$390,235
1165+00	- 1170+00	Dedicated Busway - Aerial Structure - Single B	BRT22.100	500	RF	\$2,640	\$1,320,000	25%	\$1,650,000
1165+00	- 1170+00	* Dedicated Busway - Single Lane	BRT1C.100	500	RF	\$233	\$116,641	25%	\$145,801
1170+00	- 1254+00	Dedicated Busway-Ret Fill (15ft)	BRT1.315	8,400	RF	\$1,718	\$14,434,014	25%	\$18,042,518
1254+00	- 1257+00	Dedicated Busway-Ret Fill (20ft)	BRT1.320	300	RF	\$2,635	\$790,616	25%	\$988,269
1257+00	- 1277+00	Dedicated Busway - Aerial Structure - Two Bus	BRT22.200	2,000	RF	\$3,255	\$6,510,000	25%	\$8,137,500
1277+00	- 1280+00	Dedicated Busway-Ret Fill (20ft)	BRT1.320	300	RF	\$2,635	\$790,616	25%	\$988,269
Total Guideway				18,300	RF		\$24,274,074		\$30,342,592
1.2 TRACKWORK									
Does Not Apply									
Total Trackwork							\$0		\$0
3.0 SYSTEM ELEMENTS									
3.1 TRAIN CONTROL									
Does Not Apply									
Total Train Control							\$0		\$0
3.2 TRACTION POWER									
Does Not Apply									
Total Traction Power							\$0		\$0
3.3 COMMUNICATIONS									
1097+00	- 1280+00	Communication, Line		18,300	RF	\$35	\$640,500	15%	\$736,575
Total Communications				18,300	RF		\$640,500		\$736,575
3.4 FARE COLLECTION									
All fare collection assumed on bus									
Total Fare Collection				1	LS		\$0		\$0
4.0 PASSENGER STATIONS									
Bicentennial Park Sta.		Arterial Bus Lane Platform	BRT30.100	1	LS	\$252,903	\$252,903	15%	\$290,838
Performing Arts Sta.		Arterial Bus Lane Platform	BRT30.100	1	LS	\$252,903	\$252,903	15%	\$290,838
Watson Island Sta.		Arterial Bus Lane Station	BRT30.110	1	LS	\$505,805	\$505,805	15%	\$581,676
Palm Island Sta.		Arterial Bus Lane Station	BRT30.110	1	LS	\$505,805	\$505,805	15%	\$581,676
Terminal Island Sta.		Arterial Bus Lane Station	BRT30.110	1	LS	\$505,805	\$505,805	15%	\$581,676
Total Passenger Stations				1	LS		\$2,023,220		\$2,326,703
6.0 SPECIAL CONDITIONS									
6.1 UTILITY MODIFICATIONS									
1097+00	- 1280+00	Utility Modifications Allowance - Light Urban		18,300	RF	\$50	\$915,000	30%	\$1,189,500
Total Special Conditions				18,300	RF		\$915,000		\$1,189,500
6.2 DEMOLITIONS									
None									
Total Demolitions							\$0		\$0
6.3 ROADWAY MODIFICATIONS									
None									
Total Roadway Modifications							\$0		\$0
6.4 ENVIRONMENTAL MITIGATION									
1097+00	- 1280+00	Environmental Mitigation Allowance - Light		18,300	RF	\$20	\$366,000	30%	\$475,800
Total Environmental Mitigation				18,300	RF		\$366,000		\$475,800
6.5 LANDSCAPING									
1097+00	- 1280+00	Landscaping Allowance - Guideway	LS10	18,300	RF	\$18	\$320,250	30%	\$416,325
Total Landscaping				18,300	RF		\$320,250		\$416,325
TOTAL				18,300	RF		\$1,939		\$35,487,495

<div> <div>LEVEL 4</div> <div> <div>BAY LINK</div> <div>MIAMI - MIAMI BEACH TRANSPORTATION CORRIDOR</div> <div>Segment B-1</div> <div>TECHNOLOGY ALTERNATIVE: BRT</div> <div>Sta. 1280+00 to Sta. 1378+00</div> </div> </div>									
STATIONING			COST			UNIT	BASE	DESIGN	TOTAL
BEGIN	END	DESCRIPTION	ID	QTY	UNIT	COST	COST	ALLOWANCE	COST
1.0 GUIDEWAY ELEMENTS									
1.1 GUIDEWAY									
1280+00	- 1303+00	Dedicated Busway - Arterial Curb Lanes	BRT6C.100	2,300	RF	\$328	\$755,142	25%	\$943,927
1303+00	- 1378+00	Dedicated Busway - Arterial Median w/ barrier v	BRT1C.200	7,500	RF	\$469	\$3,521,025	25%	\$4,401,281
		Total Guideway		9,800	RF		\$4,276,167		\$5,345,208
1.2 TRACKWORK									
		Does Not Apply							
		Total Trackwork					\$0		\$0
3.0 SYSTEM ELEMENTS									
3.1 TRAIN CONTROL									
		Does Not Apply							
		Total Train Control					\$0		\$0
3.2 TRACTION POWER									
		Does Not Apply							
		Total Traction Power					\$0		\$0
3.3 COMMUNICATIONS									
1280+00	- 1378+00	Communication, Line		9,800	RF	\$35	\$343,000	15%	\$394,450
		Total Communications		9,800	RF		\$343,000		\$394,450
3.4 FARE COLLECTION									
		All fare collection assumed on bus							
		Total Fare Collection		1	LS		\$0		\$0
4.0 PASSENGER STATIONS									
5th St. Sta.		Arterial Bus Lane Station	BRT30.110	1	LS	\$505,805	\$505,805	15%	\$581,676
6th St. Sta.		Arterial Bus Lane Station	BRT30.110	1	LS	\$505,805	\$505,805	15%	\$581,676
10th St. Sta.		Arterial Bus Lane Station	BRT30.110	1	LS	\$505,805	\$505,805	15%	\$581,676
14th St. Sta.		Arterial Bus Lane Station	BRT30.110	1	LS	\$505,805	\$505,805	15%	\$581,676
Lincoln Rd. Sta.		Arterial Bus Lane Station	BRT30.110	1	LS	\$505,805	\$505,805	15%	\$581,676
Convention Center Sta.		Arterial Bus Lane Station	BRT30.110	1	LS	\$505,805	\$505,805	15%	\$581,676
		Total Passenger Stations		1	LS		\$3,034,830		\$3,490,055
6.0 SPECIAL CONDITIONS									
6.1 UTILITY MODIFICATIONS									
1280+00	- 1378+00	Utility Modifications Allowance - Light Urban		9,800	RF	\$50	\$490,000	30%	\$637,000
		Total Special Conditions		9,800	RF		\$490,000		\$637,000
6.2 DEMOLITIONS									
		None							
		Total Demolitions					\$0		\$0
6.3 ROADWAY MODIFICATIONS									
		Roadway Modifications Allowance - Existing Signal	RM20	20	EA	\$80,000	\$1,600,000	30%	\$2,080,000
		Roadway Modifications Allowance - New Signal	RM21	1	EA	\$120,000	\$120,000	30%	\$156,000
		Total Roadway Modifications					\$1,720,000		\$2,236,000
6.4 ENVIRONMENTAL MITIGATION									
1280+00	- 1378+00	Environmental Mitigation Allowance - Light		9,800	RF	\$20	\$196,000	30%	\$254,800
		Total Environmental Mitigation		9,800	RF		\$196,000		\$254,800
6.5 LANDSCAPING									
1280+00	- 1378+00	Landscaping Allowance - Guideway	LS10	9,800	RF	\$18	\$171,500	30%	\$222,950
		Total Landscaping		9,800	RF		\$171,500		\$222,950
TOTAL				9,800	RF		\$1,284		\$12,580,463

LEVEL 4		BAY LINK							
MIAMI - MIAMI BEACH TRANSPORTATION CORRIDOR									
Systemwide									
TECHNOLOGY ALTERNATIVE: BRT									
STATIONING		DESCRIPTION	COST		UNIT	UNIT COST	BASE COST	DESIGN ALLOWANCE	TOTAL COST
BEGIN	END		ID	QTY					
2.0 YARD AND SHOPS									
2.1	Maintenance Facility	Allowance for Maintenance Facility, per Vehicle	21	EA	\$150,000	\$3,221,591	15%	\$3,704,830	
		Total Yard and Shops	1	LS		\$3,221,591		\$3,704,830	
5.0 VEHICLES									
5.2	BRT Vehicles	BRT Vehicles	21	EA	\$375,000	\$8,053,977	5%	\$8,456,676	
		Total Vehicles	21	EA		\$8,053,977		\$8,456,676	

LEVEL 4		BAY LINK MIAMI - MIAMI BEACH TRANSPORTATION CORRIDOR Right-of-Way							
TECHNOLOGY ALTERNATIVE: BRT									
STATIONING BEGIN END		DESCRIPTION	COST ID	QTY	UNIT	UNIT COST	BASE COST	DESIGN ALLOWANCE	TOTAL COST
7.0 RIGHT-OF-WAY									
7.1	Segment A-1	Right-of-Way		0	SF	\$15	\$0	30%	\$0
		Total Segment 1					\$0		\$0
7.2	Segment A-2	Right-of-Way		0	SF	\$15	\$0	30%	\$0
		Total Segment 2					\$0		\$0
7.3	Segment A-3	Right-of-Way		0	SF	\$15	\$0	30%	\$0
		Total Segment 3					\$0		\$0
7.4	Segment A-4	Right-of-Way		0	SF	\$25	\$0	30%	\$0
		Total Segment 4					\$0		\$0
7.5	Segment B-1	Right-of-Way		0	SF	\$15	\$0	30%	\$0
		Total Segment 5					\$0		\$0
7.6	Segment B-2	Right-of-Way		0	SF	\$15	\$0	30%	\$0
		Total Segment 6					\$0		\$0
7.7	Segment B-3	Right-of-Way		0	SF	\$15	\$0	30%	\$0
		Total Segment 7					\$0		\$0
7.11	Yard and Shop	Right-of-Way		644,318	SF	\$5	\$3,221,591	30%	\$4,188,068
		Total Yard & Shop					\$3,221,591		\$4,188,068
				14.8	AC				
TOTAL				0	SF				\$0

BAY LINK
MIAMI - MIAMI BEACH TRANSPORTATION CORRIDOR
Enhanced Bus Rapid Transit - Downtown Miami to Miami Beach Via Macauther Casuway
Capital Cost Estimate
(2001 Dollars in Millions)

Description	Segment A-1	Segment A-4	Segment B-1	Maintenance Facility	Vehicles	Total Alternative
Length (RF):	9,700	18,300	9,800			37,800
Number of Stations:	9	5	6			20
Number of Vehicles:					21	21
1.0 Guideway Elements						
1.1 Guideway	\$1.3	\$30.3	\$0.6			\$32.2
1.2 Trackwork	\$0.0	\$0.0	\$0.0			\$0.0
2.0 Yards & Shops						
2.0 Yard & Shop				\$3.7		\$3.7
3.0 System Elements						
3.1 Train Control	\$0.0	\$0.0	\$0.0			\$0.0
3.2 Traction Power	\$0.0	\$0.0	\$0.0			\$0.0
3.3 Communications	\$0.4	\$0.7	\$0.4			\$1.5
3.4 Fare Collection	\$0.0	\$0.0	\$0.0			\$0.0
4.0 Passenger Stations						
4.0 Passenger Stations	\$3.2	\$2.3	\$3.5			\$9.0
5.0 Vehicles						
5.0 Revenue Vehicles					\$8.5	\$8.5
6.0 Special Conditions						
6.1 Utility Modifications	\$0.6	\$1.2	\$0.6			\$2.5
6.2 Demolitions	\$0.0	\$0.0	\$0.0			\$0.0
6.3 Roadway Modifications	\$0.1	\$0.0	\$0.1			\$0.2
6.4 Environmental Mitigation	\$0.3	\$0.5	\$0.3			\$1.0
6.5 Landscaping	\$0.2	\$0.4	\$0.2			\$0.9
Subtotal Construction Costs	\$6.1	\$35.5	\$5.7	\$3.7	\$8.5	\$59.4
7.0 Right-of-Way						
7.0 Right-of-Way	\$0.0	\$0.0	\$0.0	\$4.2		\$4.2
8.0 Soft Costs (Calculated on Construction Cost Only)						
8.1 Preliminary Engineering 4.0%	\$0.2	\$1.4	\$0.2	\$0.1	\$0.3	\$2.4
8.2 Engineering Design 6.0%	\$0.4	\$2.1	\$0.3	\$0.2	\$0.5	\$3.6
8.3 Construction Management 8.0%	\$0.5	\$2.8	\$0.5	\$0.3	\$0.7	\$4.8
8.4 Project Management, Agency/PMC 4.0%	\$0.2	\$1.4	\$0.2	\$0.1	\$0.3	\$2.4
8.5 Change Order Contingency 7.0%	\$0.4	\$2.5	\$0.4	\$0.3	\$0.6	\$4.2
8.6 Project Insurance 5.0%	\$0.3	\$1.8	\$0.3	\$0.2	\$0.4	\$3.0
8.7 Training/Start-Up/Testing 1.0%	\$0.1	\$0.4	\$0.1	\$0.0	\$0.1	\$0.6
Subtotal Soft Costs LS	\$2.1	\$12.4	\$2.0	\$1.3	\$3.0	\$20.8
Grand Total (\$2001)	\$8.3	\$47.9	\$7.7	\$9.2	\$11.4	\$84.4

<div> <div>LEVEL 4</div> <div> <div>BAY LINK</div> <div>MIAMI - MIAMI BEACH TRANSPORTATION CORRIDOR</div> <div>Segment A-1</div> </div> </div> <div> <div>TECHNOLOGY ALTERNATIVE: BRT</div> <div>Sta. 1000+00 to Sta. 1097+00</div> </div>									
STATIONING BEGIN	END	DESCRIPTION	COST ID	QTY	UNIT	UNIT COST	BASE COST	DESIGN ALLOWANCE	TOTAL COST
1.0 GUIDEWAY ELEMENTS									
1.1 GUIDEWAY									
1000+00	- 1070+00	Mixed Flow Busway - Sngl Curb Lane	BRT1.150	7,000	RF	\$24	\$166,810	25%	\$208,513
1070+00	- 1097+00	Dedicated Busway - Arterial Curb Lanes	BRT6C.10C	2,700	RF	\$328	\$886,471	25%	\$1,108,088
		Total Guideway		9,700	RF		\$1,053,281		\$1,316,601
1.2 TRACKWORK									
		Does Not Apply							
		Total Trackwork					\$0		\$0
3.0 SYSTEM ELEMENTS									
3.1 TRAIN CONTROL									
		Does Not Apply							
		Total Train Control					\$0		\$0
3.2 TRACTION POWER									
		Does Not Apply							
		Total Traction Power					\$0		\$0
3.3 COMMUNICATIONS									
1000+00	- 1097+00	Communication, Line		9,700	RF	\$35	\$339,500	15%	\$390,425
		Total Communications		9,700	RF		\$339,500		\$390,425
3.4 FARE COLLECTION									
		All fare collection assumed on bus							
		Total Fare Collection					\$0		\$0
4.0 PASSENGER STATIONS									
		NE 1st St./Biscayne Blvd. Arterial Bus Lane Platform	BRT30.100	1	LS	\$252,903	\$252,903	15%	\$290,838
		NE 1st St./2nd Ave. Sta. Arterial Bus Lane Platform	BRT30.100	1	LS	\$252,903	\$252,903	15%	\$290,838
		NE 1st St./Miami Ave. Sta Arterial Bus Lane Platform	BRT30.100	1	LS	\$252,903	\$252,903	15%	\$290,838
		Government Center Sta. Arterial Bus Lane Platform	BRT30.100	1	LS	\$252,903	\$252,903	15%	\$290,838
		SE 1st St./Miami Ave. Sta Arterial Bus Lane Platform	BRT30.100	1	LS	\$252,903	\$252,903	15%	\$290,838
		SE 1st St./2nd Ave. Sta. Arterial Bus Lane Platform	BRT30.100	1	LS	\$252,903	\$252,903	15%	\$290,838
		Bayfront Station Arterial Bus Lane Platform	BRT30.100	1	LS	\$252,903	\$252,903	15%	\$290,838
		Bayside Station Arterial Bus Lane Station	BRT30.110	1	LS	\$505,805	\$505,805	15%	\$581,676
		AA Arena Sta. Arterial Bus Lane Station	BRT30.110	1	LS	\$505,805	\$505,805	15%	\$581,676
		Total Passenger Stations		1	LS		\$2,781,928		\$3,199,217
6.0 SPECIAL CONDITIONS									
6.1 UTILITY MODIFICATIONS									
1000+00	- 1097+00	Utility Modifications Allowance - Light Urban		9,700	RF	\$50	\$485,000	30%	\$630,500
		Total Special Conditions		9,700	RF		\$485,000		\$630,500
6.2 DEMOLITIONS									
		None							
		Total Demolitions					\$0		\$0
6.3 ROADWAY MODIFICATIONS									
		Roadway Modifications Allowance - Existing Sit	RM20	1	EA	\$80,000	\$80,000	30%	\$104,000
		Total Roadway Modifications					\$80,000		\$104,000
6.4 ENVIRONMENTAL MITIGATION									
1000+00	- 1097+00	Environmental Mitigation Allowance - Light		9,700	RF	\$20	\$194,000	30%	\$252,200
		Total Environmental Mitigation		9,700	RF		\$194,000		\$252,200
6.5 LANDSCAPING									
1000+00	- 1097+00	Landscaping Allowance - Guideway	LS10	9,700	RF	\$18	\$169,750	30%	\$220,675
		Total Landscaping		9,700	RF		\$169,750		\$220,675
TOTAL				9,700	RF		\$630		\$6,113,618

LEVEL 4									
BAY LINK									
MIAMI - MIAMI BEACH TRANSPORTATION CORRIDOR									
Segment A-4									
Sta. 1097+00 to Sta. 1280+00									
TECHNOLOGY ALTERNATIVE: BRT									
STATIONING		DESCRIPTION	COST	QTY	UNIT	UNIT COST	BASE COST	DESIGN ALLOWANCE	TOTAL COST
BEGIN	END		ID						
1.0 GUIDEWAY ELEMENTS									
1.1 GUIDEWAY									
1097+00	- 1165+00	Mixed Flow Busway - Dbl Curb Lane	BRT1.152	6,800	RF	\$46	\$312,188	25%	\$390,235
1165+00	- 1170+00	Dedicated Busway - Aerial Structure - Single B	BRT22.100	500	RF	\$2,640	\$1,320,000	25%	\$1,650,000
1165+00	- 1170+00	* Dedicated Busway - Single Lane	BRT1C.100	500	RF	\$233	\$116,641	25%	\$145,801
1170+00	- 1254+00	Dedicated Busway-Ret Fill (15ft)	BRT1.315	8,400	RF	\$1,718	\$14,434,014	25%	\$18,042,518
1254+00	- 1257+00	Dedicated Busway-Ret Fill (20ft)	BRT1.320	300	RF	\$2,635	\$790,616	25%	\$988,269
1257+00	- 1277+00	Dedicated Busway - Aerial Structure - Two Bus	BRT22.200	2,000	RF	\$3,255	\$6,510,000	25%	\$8,137,500
1277+00	- 1280+00	Dedicated Busway-Ret Fill (20ft)	BRT1.320	300	RF	\$2,635	\$790,616	25%	\$988,269
Total Guideway				18,300	RF		\$24,274,074		\$30,342,592
1.2 TRACKWORK									
Does Not Apply									
Total Trackwork							\$0		\$0
3.0 SYSTEM ELEMENTS									
3.1 TRAIN CONTROL									
Does Not Apply									
Total Train Control							\$0		\$0
3.2 TRACTION POWER									
Does Not Apply									
Total Traction Power							\$0		\$0
3.3 COMMUNICATIONS									
1097+00	- 1280+00	Communication, Line		18,300	RF	\$35	\$640,500	15%	\$736,575
Total Communications				18,300	RF		\$640,500		\$736,575
3.4 FARE COLLECTION									
All fare collection assumed on bus									
Total Fare Collection				1	LS		\$0		\$0
4.0 PASSENGER STATIONS									
Bicentennial Park Sta.		Arterial Bus Lane Platform	BRT30.100	1	LS	\$252,903	\$252,903	15%	\$290,838
Performing Arts Sta.		Arterial Bus Lane Platform	BRT30.100	1	LS	\$252,903	\$252,903	15%	\$290,838
Watson Island Sta.		Arterial Bus Lane Station	BRT30.110	1	LS	\$505,805	\$505,805	15%	\$581,676
Palm Island Sta.		Arterial Bus Lane Station	BRT30.110	1	LS	\$505,805	\$505,805	15%	\$581,676
Terminal Island Sta.		Arterial Bus Lane Station	BRT30.110	1	LS	\$505,805	\$505,805	15%	\$581,676
Total Passenger Stations				1	LS		\$2,023,220		\$2,326,703
6.0 SPECIAL CONDITIONS									
6.1 UTILITY MODIFICATIONS									
1097+00	- 1280+00	Utility Modifications Allowance - Light Urban		18,300	RF	\$50	\$915,000	30%	\$1,189,500
Total Special Conditions				18,300	RF		\$915,000		\$1,189,500
6.2 DEMOLITIONS									
None									
Total Demolitions							\$0		\$0
6.3 ROADWAY MODIFICATIONS									
None									
Total Roadway Modifications							\$0		\$0
6.4 ENVIRONMENTAL MITIGATION									
1097+00	- 1280+00	Environmental Mitigation Allowance - Light		18,300	RF	\$20	\$366,000	30%	\$475,800
Total Environmental Mitigation				18,300	RF		\$366,000		\$475,800
6.5 LANDSCAPING									
1097+00	- 1280+00	Landscaping Allowance - Guideway	LS10	18,300	RF	\$18	\$320,250	30%	\$416,325
Total Landscaping				18,300	RF		\$320,250		\$416,325
TOTAL				18,300	RF		\$1,939		\$35,487,495

LEVEL 4		BAY LINK MIAMI - MIAMI BEACH TRANSPORTATION CORRIDOR Segment B-1 TECHNOLOGY ALTERNATIVE: BRT Sta. 1280+00 to Sta. 1378+00							
STATIONING BEGIN	STATIONING END	DESCRIPTION	COST ID	QTY	UNIT	UNIT COST	BASE COST	DESIGN ALLOWANCE	TOTAL COST
1.0 GUIDEWAY ELEMENTS									
1.1 GUIDEWAY									
1280+00	- 1303+00	Mixed Flow Busway - Dbl Curb Lane	BRT1.152	2,300	RF	\$46	\$105,593	25%	\$131,991
1303+00	- 1378+00	Mixed Flow Busway - Median	BRT1.155	7,500	RF	\$47	\$355,575	25%	\$444,469
Total Guideway				9,800	RF		\$461,168		\$576,460
1.2 TRACKWORK									
Does Not Apply									
Total Trackwork							\$0		\$0
3.0 SYSTEM ELEMENTS									
3.1 TRAIN CONTROL									
Does Not Apply									
Total Train Control							\$0		\$0
3.2 TRACTION POWER									
Does Not Apply									
Total Traction Power							\$0		\$0
3.3 COMMUNICATIONS									
1280+00	- 1378+00	Communication, Line		9,800	RF	\$35	\$343,000	15%	\$394,450
Total Communications				9,800	RF		\$343,000		\$394,450
3.4 FARE COLLECTION									
All fare collection assumed on bus									
Total Fare Collection				1	LS		\$0		\$0
4.0 PASSENGER STATIONS									
5th St. Sta.		Arterial Bus Lane Station	BRT30.110	1	LS	\$505,805	\$505,805	15%	\$581,676
6th St. Sta.		Arterial Bus Lane Station	BRT30.110	1	LS	\$505,805	\$505,805	15%	\$581,676
10th St. Sta.		Arterial Bus Lane Station	BRT30.110	1	LS	\$505,805	\$505,805	15%	\$581,676
14th St. Sta.		Arterial Bus Lane Station	BRT30.110	1	LS	\$505,805	\$505,805	15%	\$581,676
Lincoln Rd. Sta.		Arterial Bus Lane Station	BRT30.110	1	LS	\$505,805	\$505,805	15%	\$581,676
Convention Center Sta.		Arterial Bus Lane Station	BRT30.110	1	LS	\$505,805	\$505,805	15%	\$581,676
Total Passenger Stations				1	LS		\$3,034,830		\$3,490,055
6.0 SPECIAL CONDITIONS									
6.1 UTILITY MODIFICATIONS									
1280+00	- 1378+00	Utility Modifications Allowance - Light Urban		9,800	RF	\$50	\$490,000	30%	\$637,000
Total Special Conditions				9,800	RF		\$490,000		\$637,000
6.2 DEMOLITIONS									
None									
Total Demolitions							\$0		\$0
6.3 ROADWAY MODIFICATIONS									
Roadway Modifications Allowance - Existing Sig			RM20	1	EA	\$80,000	\$80,000	30%	\$104,000
Total Roadway Modifications							\$80,000		\$104,000
6.4 ENVIRONMENTAL MITIGATION									
1280+00	- 1378+00	Environmental Mitigation Allowance - Light		9,800	RF	\$20	\$196,000	30%	\$254,800
Total Environmental Mitigation				9,800	RF		\$196,000		\$254,800
6.5 LANDSCAPING									
1280+00	- 1378+00	Landscaping Allowance - Guideway	LS10	9,800	RF	\$18	\$171,500	30%	\$222,950
Total Landscaping				9,800	RF		\$171,500		\$222,950
TOTAL				9,800	RF		\$580		\$5,679,715

LEVEL 4		BAY LINK MIAMI - MIAMI BEACH TRANSPORTATION CORRIDOR Systemwide							
TECHNOLOGY ALTERNATIVE: BRT									
STATIONING BEGIN	END	DESCRIPTION	COST ID	QTY	UNIT	UNIT COST	BASE COST	DESIGN ALLOWANCE	TOTAL COST
2.0 YARD AND SHOPS									
2.1	Maintenance Facility	Allowance for Maintenance Facility, per Vehicle		21	EA	\$150,000	\$3,221,591	15%	\$3,704,830
		Total Yard and Shops		1	LS		\$3,221,591		\$3,704,830
5.0 VEHICLES									
5.2	BRT Vehicles	BRT Vehicles		21	EA	\$375,000	\$8,053,977	5%	\$8,456,676
		Total Vehicles		21	EA		\$8,053,977		\$8,456,676

*Miami Beach Bay Link Corridor Study
Technical Memorandum
Capital Cost Estimating Methodology
March 2002*

